



My Y5 Home Maths Learning Pack

My Name is: _____

My Mathletics log on is: _____

My Mathletics password is: _____

My Education City log on is: _____

My Education City password is: _____

The Year 5 Learning pack

Advice and suggestions – below are a slightly random list of helps and hints for how to help your child with their learning at home, it is only advice and suggestions and it is aimed to help:

- At school learning is a social activity as well as just getting on individually so “get on with what you’ve got to do” won’t work – children will become demotivated very quickly. Talk through regularly with your child what they are doing / learning. More than 10 minutes of individual, silent learning is hard to sustain for children unless they are really into it. So make it a fun family activity.
- Hear your child read, even if they are very good at reading already
- Have an agreed routine and timetable for your day that your child and you can refer to (at school we have written up what we will do / be learning and when). This will help your child not to be anxious, know what to expect is coming up in the day and also help you know what’s going on for the day. It might just be a list of times and what learning you/they will be doing at that time.
- We are suggesting that you spend 20 minutes on mathematics, 20 minutes writing (see later on for suggestions about this), 20 minutes reading and then 20 minutes other subjects. This timetable below has been found online – you might find it helpful but you might not, it is just an example & the eagle eyed will notice it contains more academic time than suggested above!

Before 9:00am	Wake up	Eat breakfast, make your bed, get dressed, put PJ's in laundry
9:00-10:00	Morning walk	Family walk with the dog Yoga if it's raining
10:00-11:00	Academic time	NO ELECTRONICS Sudoku books, flash cards, study guide, Journal
11:00-12:00	Creative time	Legos, magnetiles, drawing, crafting, play music, cook or bake, etc
12:00	Lunch	
12:30PM	Chore time	A - wipe all kitchen table and chairs B - wipe all door handles, light switches, and desk tops C - Wipe both bathrooms - sinks and toilets
1:00-2:30	Quiet time	Reading, puzzles, nap
2:30-4:00	Academic time	ELECTRONICS OK Ipad games, Prodigy, Educational show
4:00-5:00	Afternoon fresh air	Bikes, Walk the dog, play outside
5:00-6:00	Dinner	
6:00-8:00	Free TV time	Kid showers x3
8:00	Bedtime	All kids

- Hear your child read to you
- Screen time (gaming or watching stuff) is hard to break off from because of the different brain chemicals it causes to be released – so save it until after more formal paper based learning has been done
- Have a family story that you are reading together and perhaps at the end of a mealtime or on the run up to bedtime you read some together which all the children are enjoying
- Praise the learning behaviours you want to see, e.g. “I love how you have persevered at your handwriting today” or “I am so impressed that you have tidied up your junk modelling so well today”
- Read your child’s book to them for a bit
- Chat about new and unusual words in your child’s book and write them in their reading record
- Read together – a page each
- Be outdoors where and when you can
- Read something unusual like a seed packet or some cooking instructions / recipe together
- Low mood = food, we see a real dip in attention and interest in learning from 10.30am and just before lunch and towards the end of the day because often low mood = need food. Healthy snacks can quickly change the mood.

Other Suggestions from some children in year 5 and some from their teachers

- Write a diary each day – 3 to 5 sentences where you capture a best moment, a funny moment and something that you discovered new or surprising
- Junk Modelling – some have suggested turning cereal boxes inside out first so that you can then decorate them!
- Science experiments - <https://www.stem.org.uk/resources> and then click “primary” has some lovely experiments you could do, it is a website for teachers and the language is for grown-ups so we suggest you look ahead of time and decide what to do
- Another useful website is <https://www.bbc.co.uk/teach/primary/zd7p47h> or search “bbc teach primary” which has some fun short videos in subject areas as well as other resources that you might like to look at
- Create and play a board game
- Art topic – create a collage
- Use Mathletics - see front covers for log on details
- Use Education city – see front cover for log on details
- Do some exercise! Joe Wicks on youtube does a 5 minute work out for children – search “Joe Wicks 5 minute move”
- Create a garden sculpture
- Create a poster about anything you like, perhaps about your favourite thing to do
- Write a letter to a relative, photograph it and email it through to prevent the spread of germs
- Create a photo montage of picture you make then share it with a loved one you can’t visit at present, perhaps turn a few pictures you draw into an animation
- Have a daily checklist of what you need to do and tick them off each day
- Do some cooking or baking together and use the experience to inspire you to write a short story or perhaps a recipe
- Draw a symmetrical pattern using a ruler and then add colour
- Create a comic strip
- Have some time sat quietly and calmly listening to the sounds around you
- Write a book review – what would people want to know or need to know to be persuaded to read that book
- Write a film review - what would people want to know or need to know to be persuaded to watch the film
- Make a time capsule (search online for more information)

PACKS – We have created these packs, there is a Maths pack with addition, subtraction, multiplication and division as well as looking at data and finally, telling the time. There is also a general pack that includes answers to all we have set where answers are required.

Best wishes,

The Year 5 team

Multiplication Square

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144



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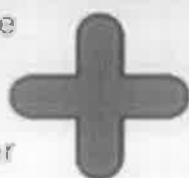
Published by Chalk Media
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www.chalkmedia.co.uk



Numeracy Vocabulary

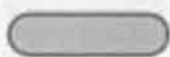
Add

and
increase
sum
total
plus
together
more



Subtract

difference between
take away
minus
fewer
reduce
decrease
take from



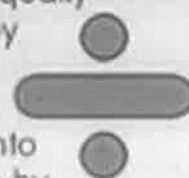
Multiply

multiplied by
groups of
times
product
lots of
times table

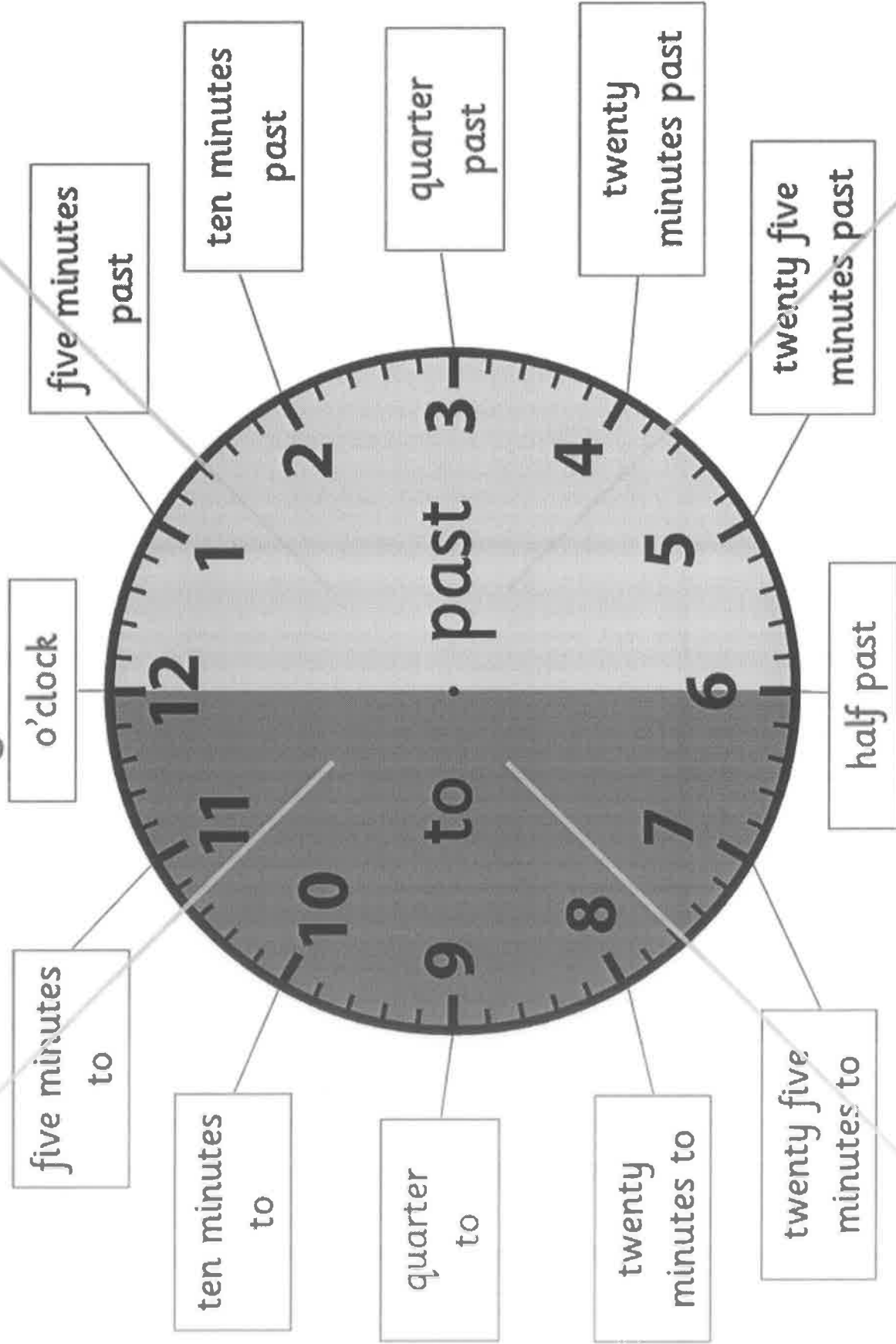


Divide

share equally
divide by
group
share
divide into
divisible by



Telling the Time



Colour by Multiplication

Do the multiplication calculation and colour the shape in the correct colour.

0-10

light blue

11-20

purple

21-30

pink

31-40

yellow

41-50

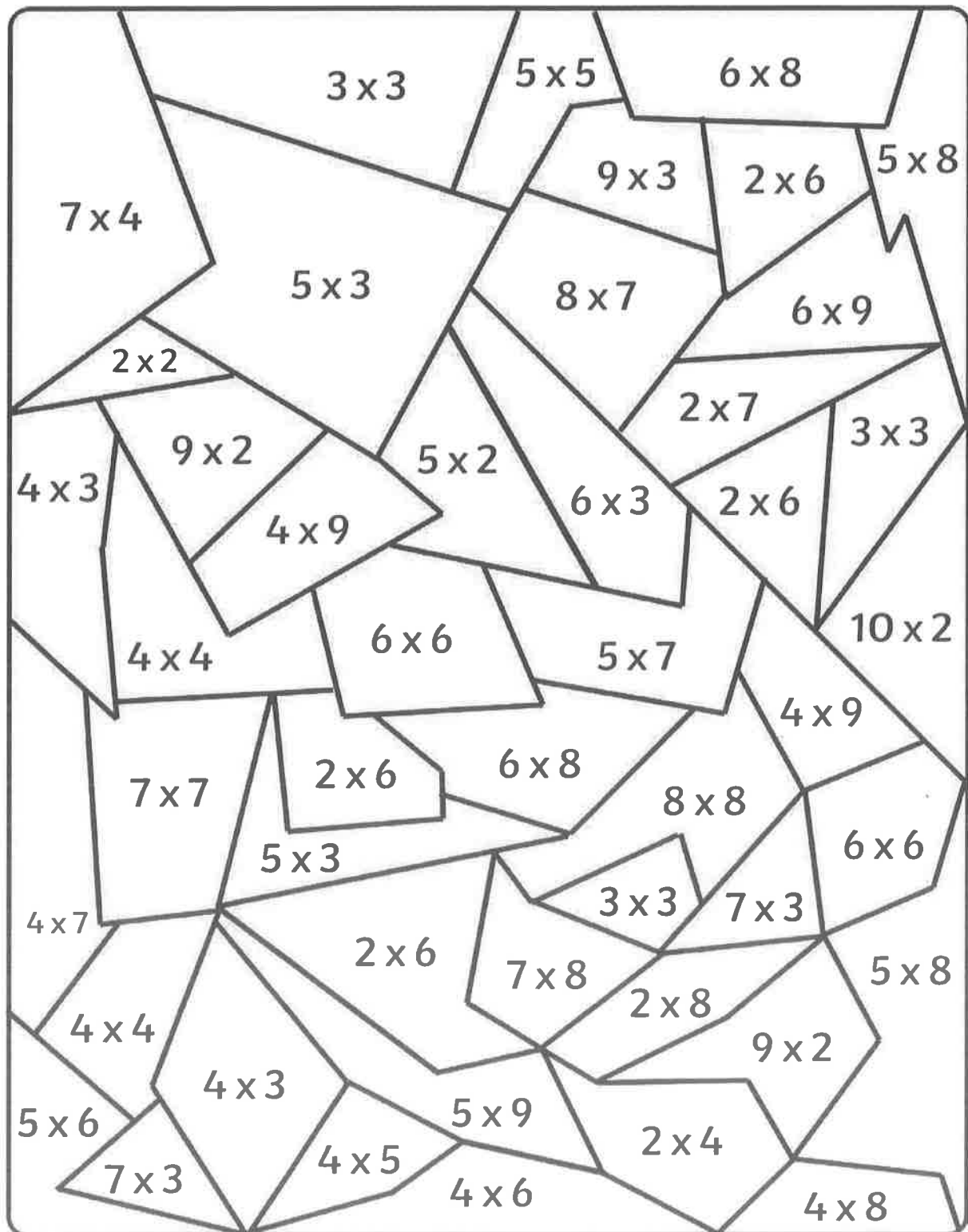
green

51-60

orange

61-70

dark blue

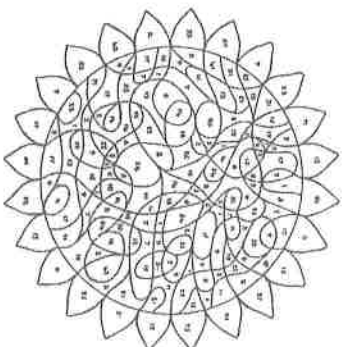


1	X 2	=
2	X 2	=
3	X 2	=
4	X 2	=
5	X 2	=
6	X 2	=
7	X 2	=
8	X 2	=
9	X 2	=
10	X 2	=
11	X 2	=
12	X 2	=

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete this table.

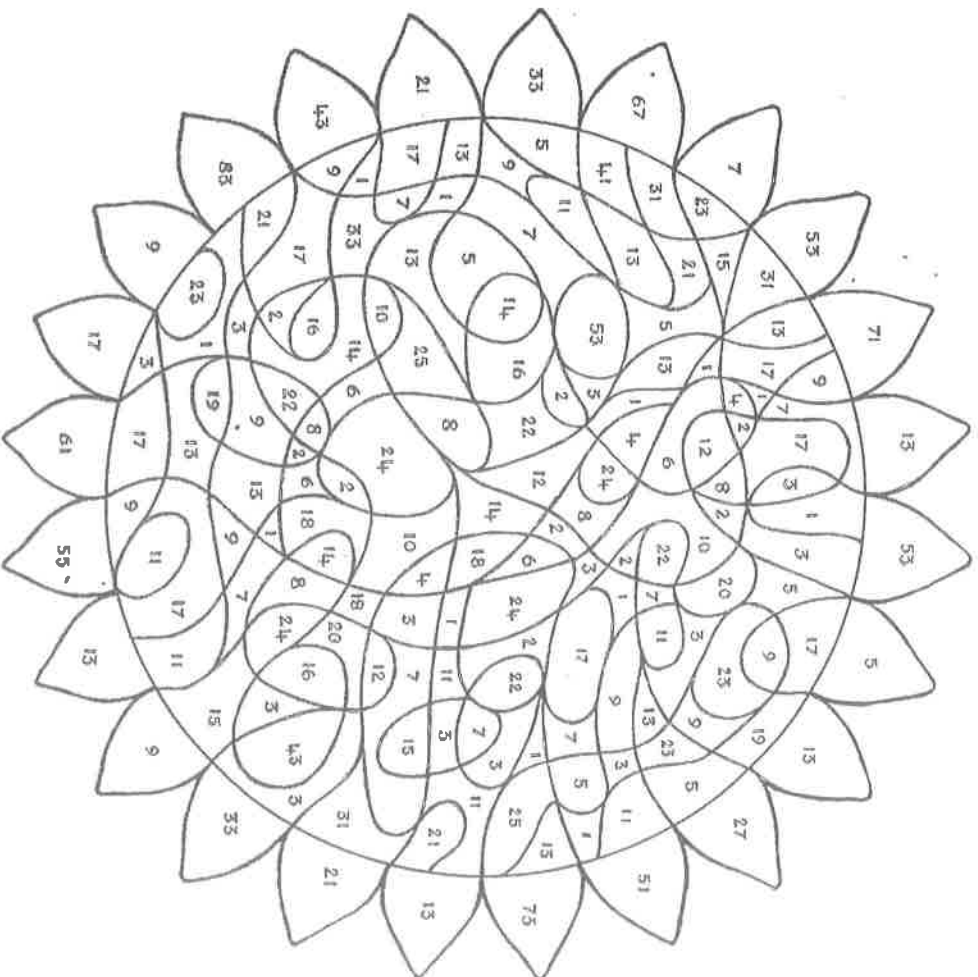
Make a pattern by colouring all the numbers which are multiples of 2.



Solve the puzzle picture opposite by colouring just those numbers which divide by 2.
What can you see?

Picture Puzzle

2 X table



Three times table

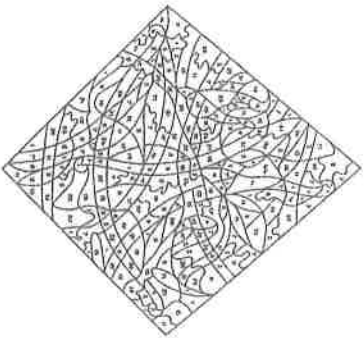
1	X	3	=
2	X	3	=
3	X	3	=
4	X	3	=
5	X	3	=
6	X	3	=
7	X	3	=
8	X	3	=
9	X	3	=
10	X	3	=
11	X	3	=
12	X	3	=

Complete this table.

Multiples of three

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100

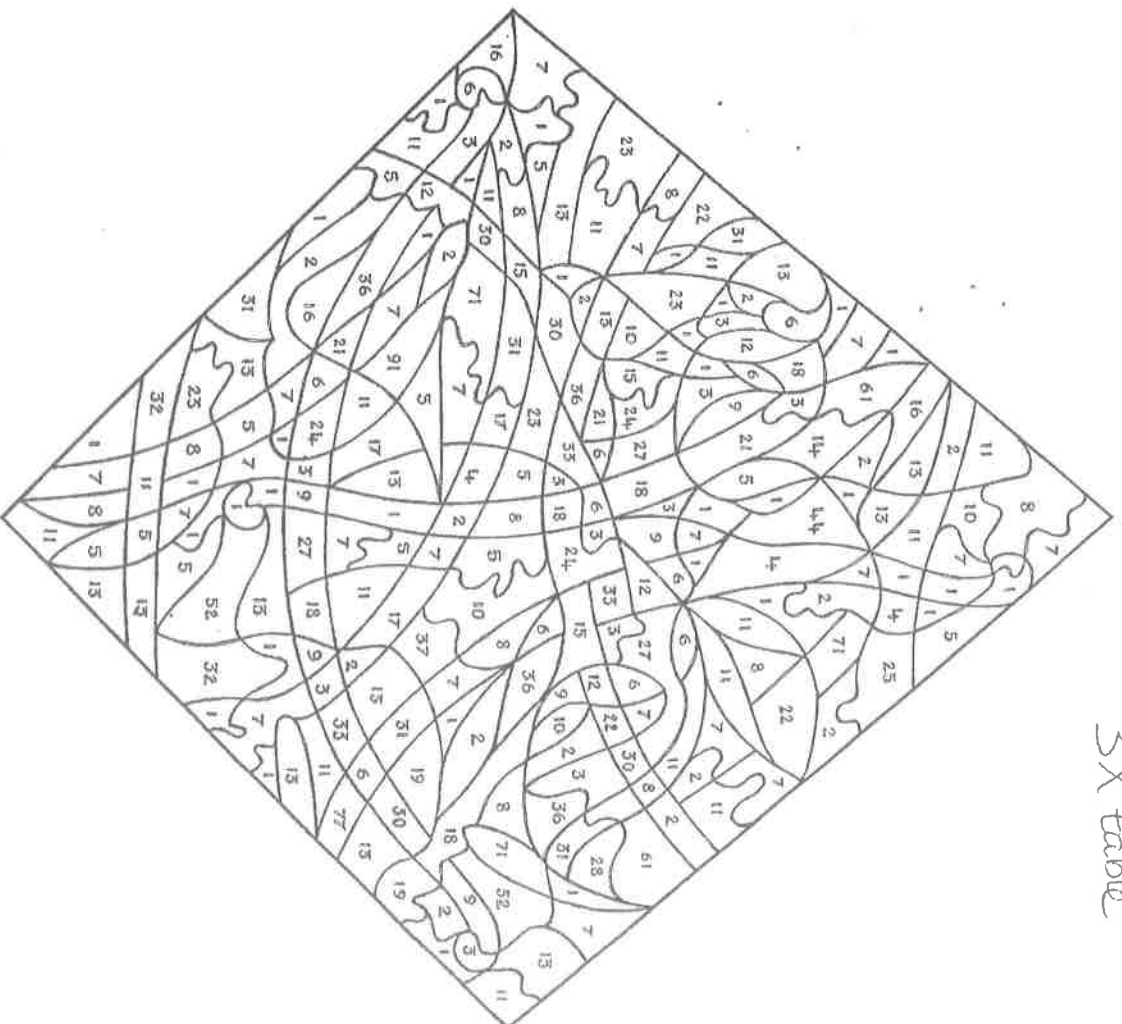
Make a pattern by colouring all the numbers which are multiples of 3.



Solve the puzzle picture opposite by colouring just those numbers which divide by 3.
What can you see?

Picture Puzzle

3 X table



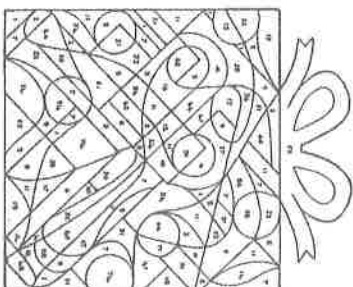
Multiples of four

1	X	f	1
2	X	f	1
3	X	f	1
4	X	f	1
5	X	f	1
6	X	f	1
7	X	f	1
8	X	f	1
9	X	f	1
10	X	f	1
11	X	f	1
12	X	f	1

Complete this table.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100

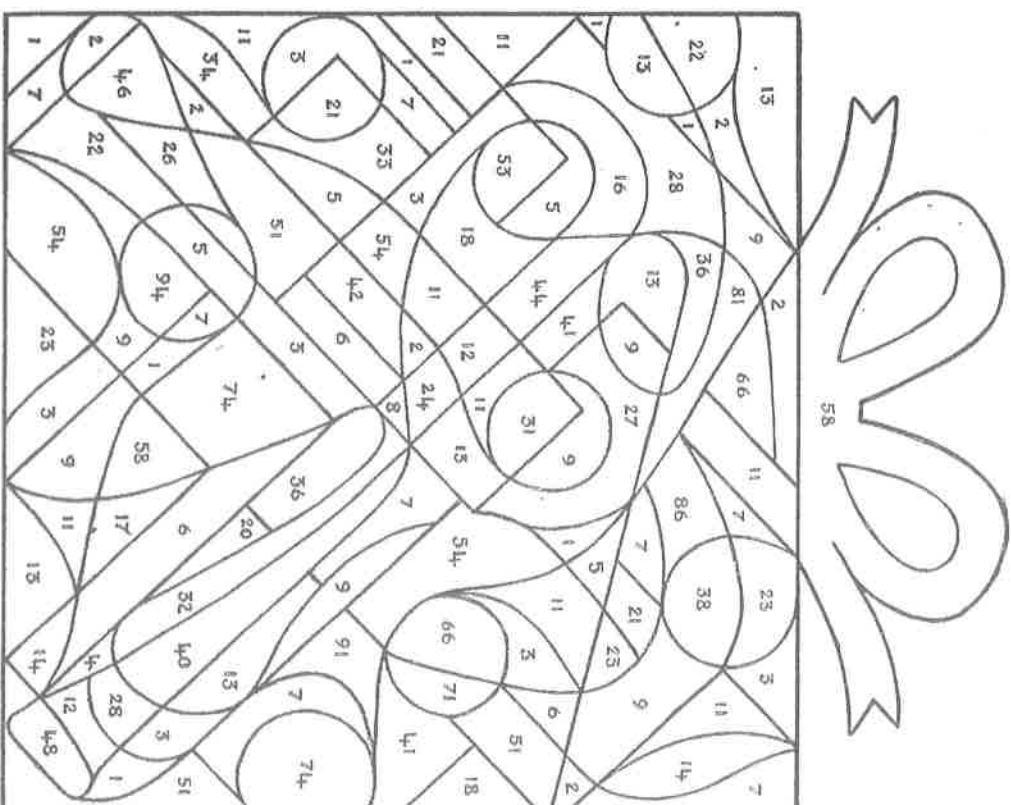
Make a pattern by colouring all the numbers which are multiples of 4.



Solve the puzzle picture opposite by colouring just those numbers which divide by 4.
What can you see?

Picture Puzzle

4 x table



Five times table

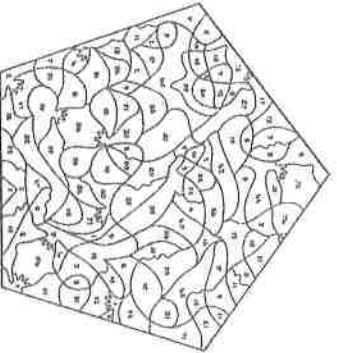
1	X	5	=
2	X	5	=
3	X	5	=
4	X	5	=
5	X	5	=
6	X	5	=
7	X	5	=
8	X	5	=
9	X	5	=
10	X	5	=
11	X	5	=
12	X	5	=

Complete this table.

Multiples of five

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

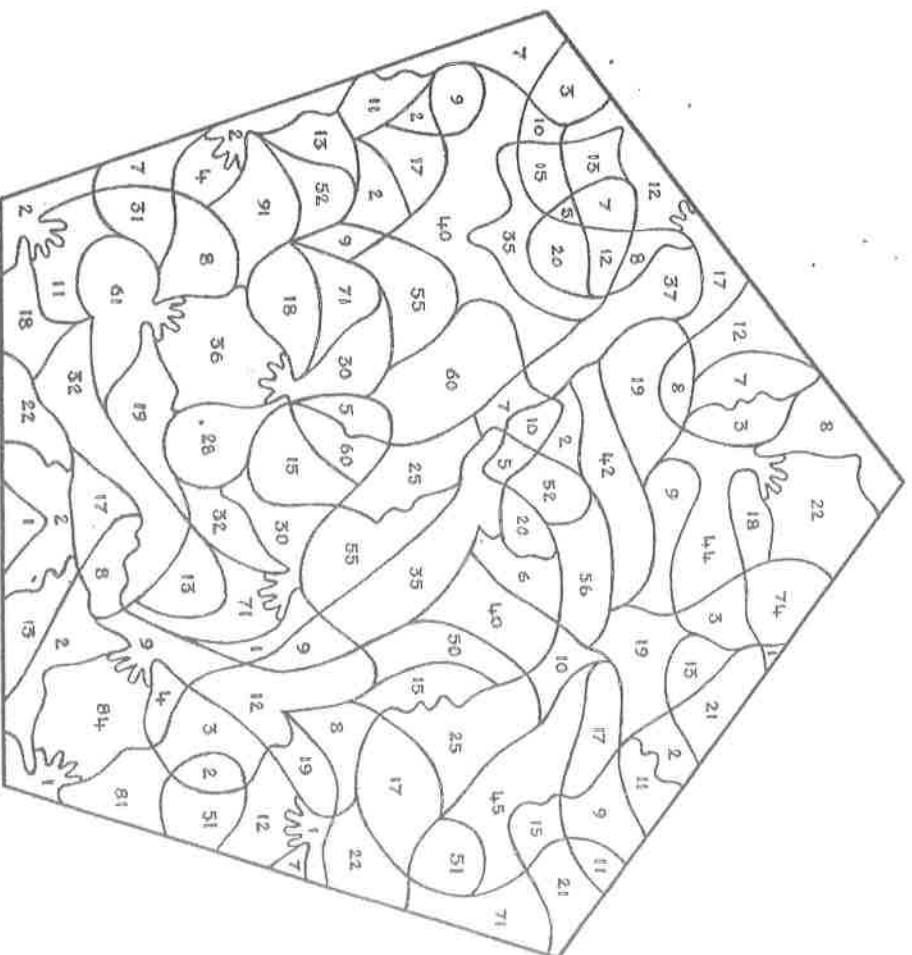
Make a pattern by colouring all the numbers which are multiples of 5.



Solve the puzzle picture opposite by colouring just those numbers which divide by 5.
What can you see?

Picture Puzzle

5 X table



Six times table

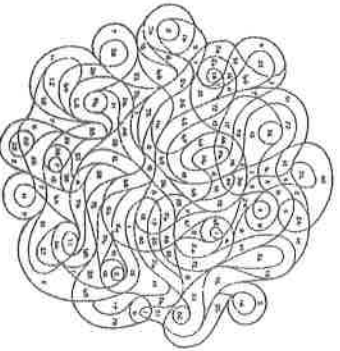
1	X	6	=
2	X	6	=
3	X	6	=
4	X	6	=
5	X	6	=
6	X	6	=
7	X	6	=
8	X	6	=
9	X	6	=
10	X	6	=
11	X	6	=
12	X	6	=

Multiples of six

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete this table.

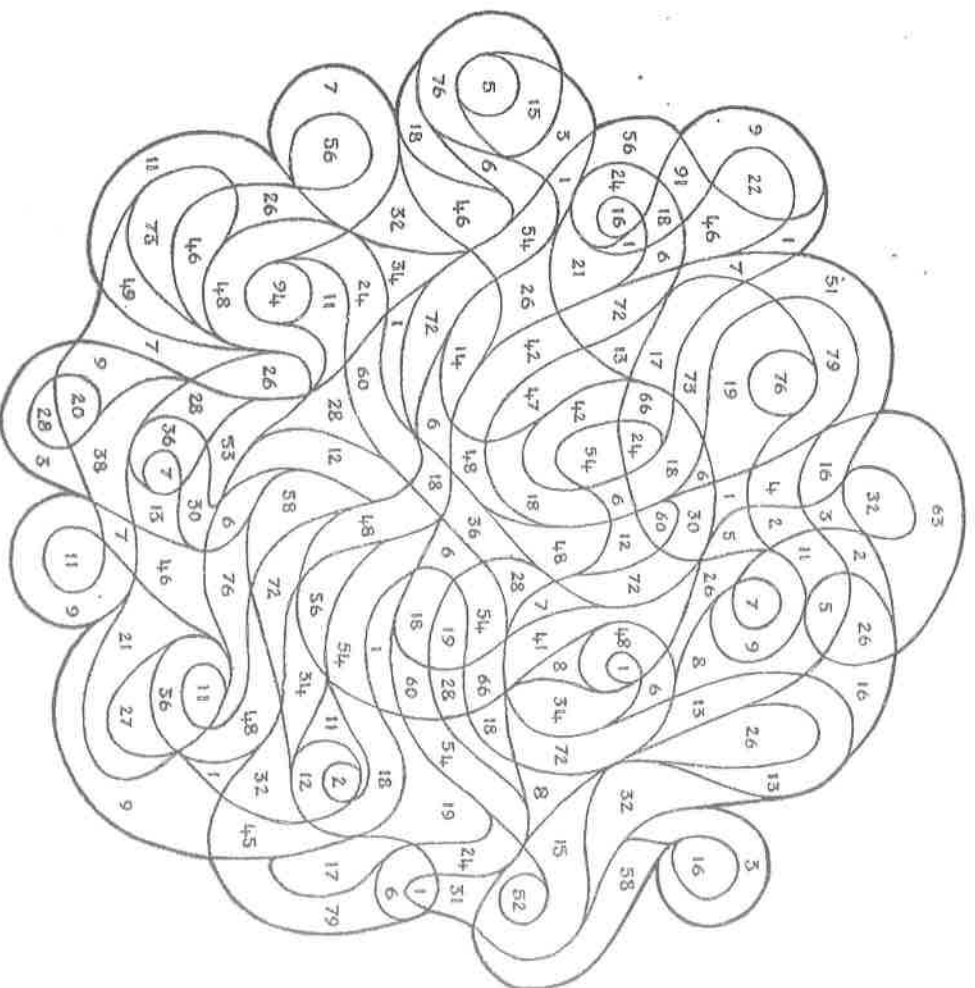
Make a pattern by colouring all the numbers which are multiples of 6.



Solve the puzzle picture opposite by colouring just those numbers which divide by 6.
What can you see?

Picture Puzzle

6 x table



Seven times table

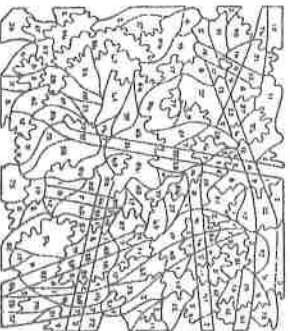
1	X	7	=
2	X	7	=
3	X	7	=
4	X	7	=
5	X	7	=
6	X	7	=
7	X	7	=
8	X	7	=
9	X	7	=
10	X	7	=
11	X	7	=
12	X	7	=

Complete this table.

Multiples of seven

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100

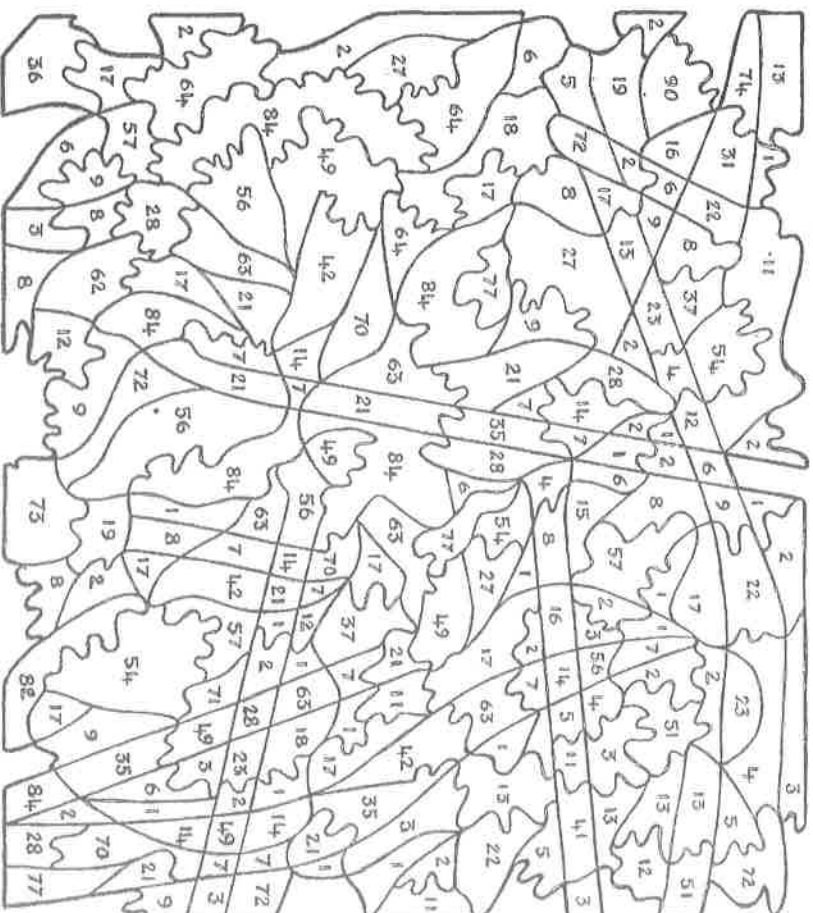
Make a pattern by colouring all the numbers which are multiples of 7.



Solve the puzzle picture opposite by colouring just those numbers which divide by 7.
What can you see?

Picture Puzzle

7 X table



Eight times table

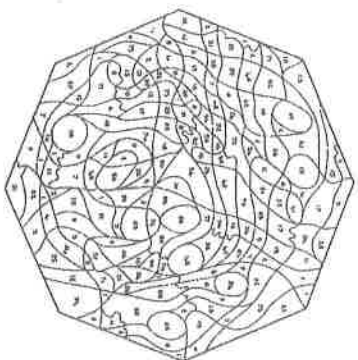
1	8	=
2	8	=
3	8	=
4	8	=
5	8	=
6	8	=
7	8	=
8	8	=
9	8	=
10	8	=
11	8	=
12	8	=

Complete this table.

Multiples of eight

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100

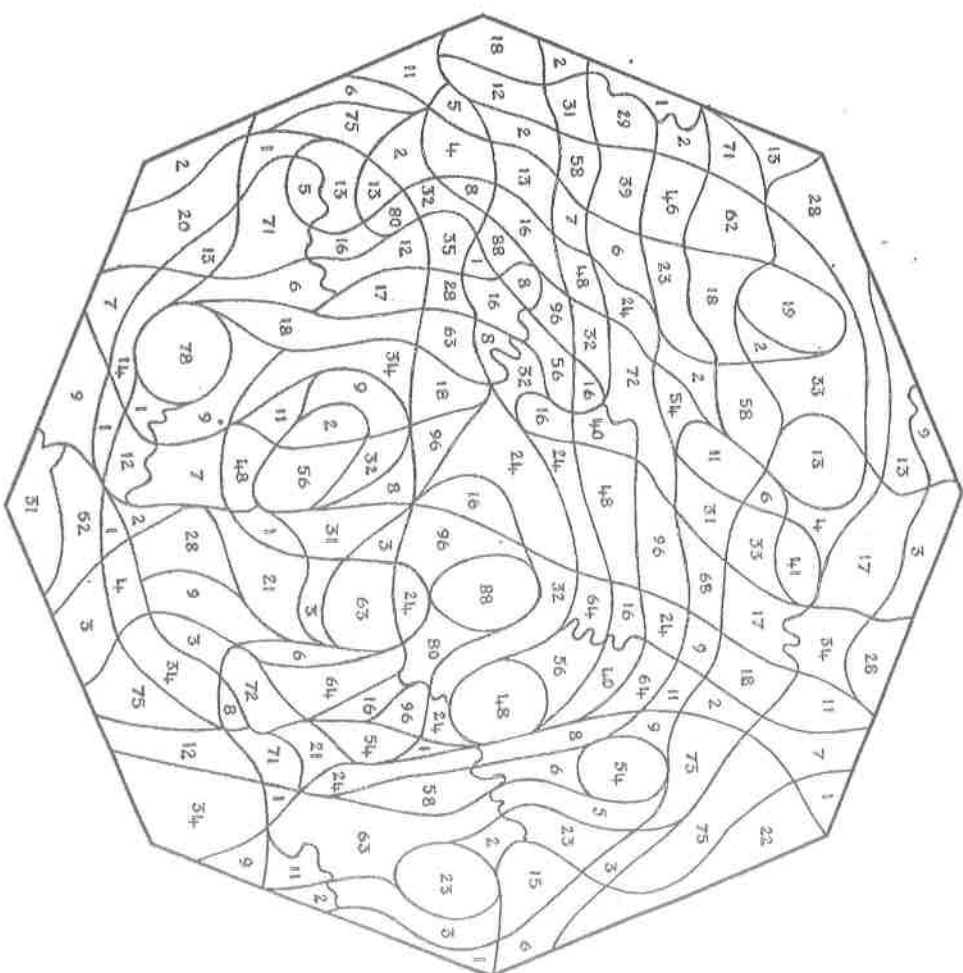
Make a pattern by colouring all the numbers which are multiples of 8.



Solve the puzzle picture opposite by colouring just those numbers which divide by 8.
What can you see?

Picture Puzzle

8 x table



Nine times table

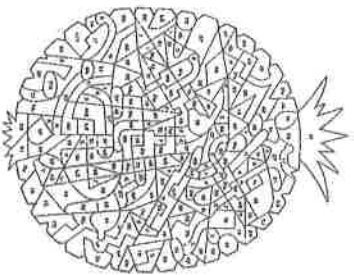
1	X	9	=
2	X	9	=
3	X	9	=
4	X	9	=
5	X	9	=
6	X	9	=
7	X	9	=
8	X	9	=
9	X	9	=
10	X	9	=
11	X	9	=
12	X	9	=

Multiples of nine

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete this table.

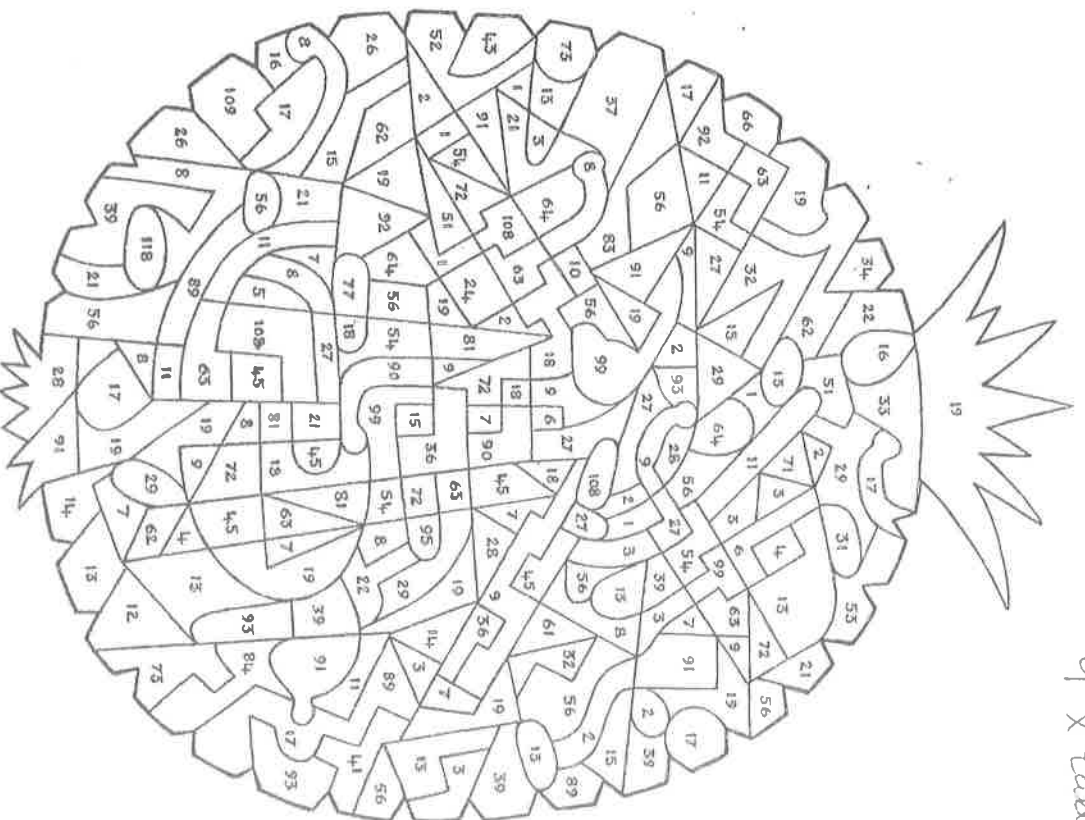
Make a pattern by colouring all the numbers which are multiples of 9.



Solve the puzzle picture opposite by colouring just those numbers which divide by 9.
What can you see?

Picture Puzzle

9 x table



Ten times table

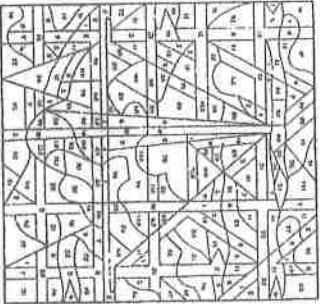
1 X 10 =
2 X 10 =
3 X 10 =
4 X 10 =
5 X 10 =
6 X 10 =
7 X 10 =
8 X 10 =
9 X 10 =
10 X 10 =
11 X 10 =
12 X 10 =

Complete this table.

Multiples of ten

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

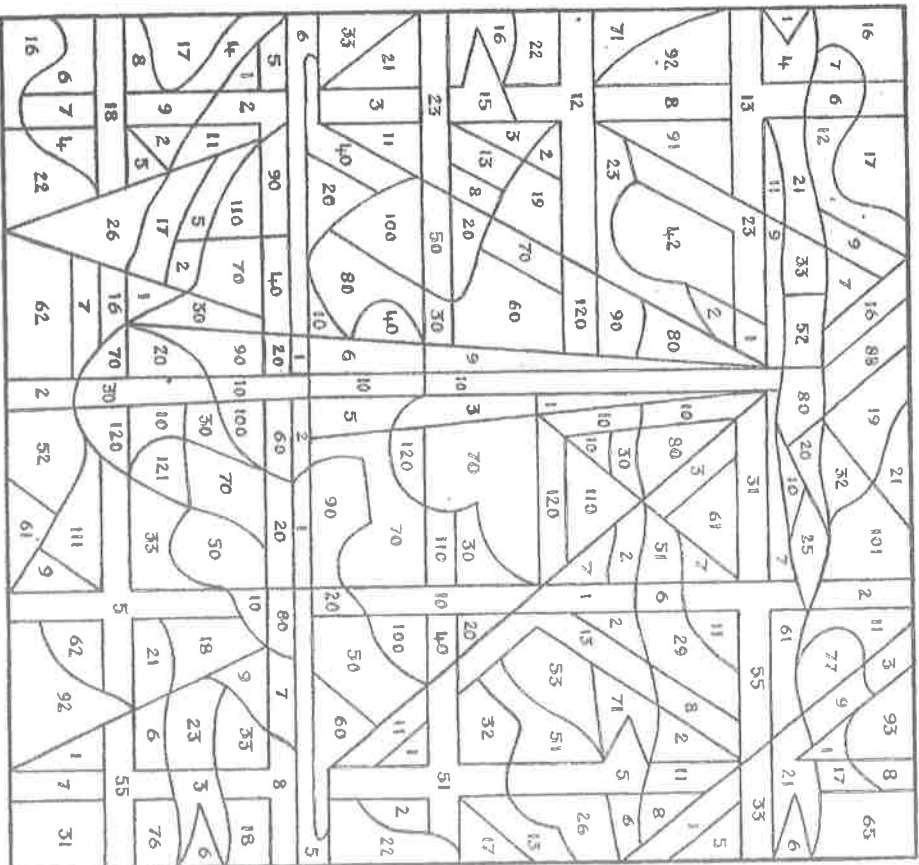
Make a pattern by colouring all the numbers which are multiples of 10.



Solve the puzzle picture opposite by colouring just those numbers which divide by 10.
What can you see?

Picture Puzzle

10 x table



Eleven times table

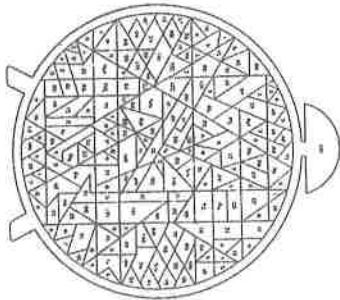
1 x 11 =
2 x 11 =
3 x 11 =
4 x 11 =
5 x 11 =
6 x 11 =
7 x 11 =
8 x 11 =
9 x 11 =
10 x 11 =
11 x 11 =
12 x 11 =

Multiples of eleven

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete this table.

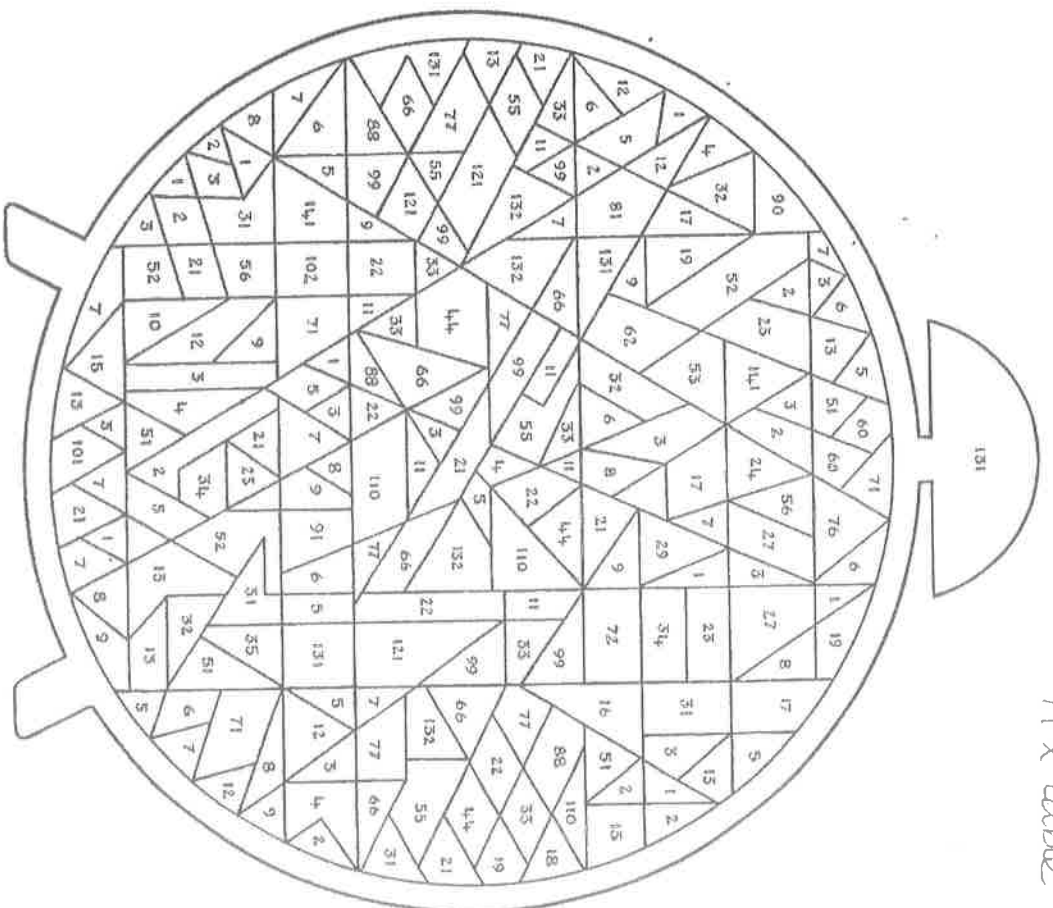
Make a pattern by colouring all the numbers which are multiples of 11.



Solve the puzzle picture opposite by colouring just those numbers which divide by 11.
What can you see?

Picture Puzzle

11 x table

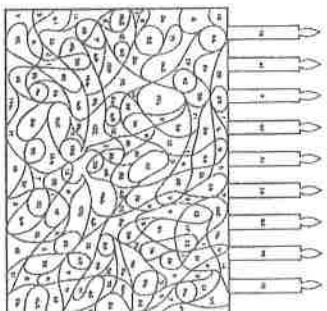


1	$\times 12 =$
2	$\times 12 =$
3	$\times 12 =$
4	$\times 12 =$
5	$\times 12 =$
6	$\times 12 =$
7	$\times 12 =$
8	$\times 12 =$
9	$\times 12 =$
10	$\times 12 =$
11	$\times 12 =$
12	$\times 12 =$

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete this table.

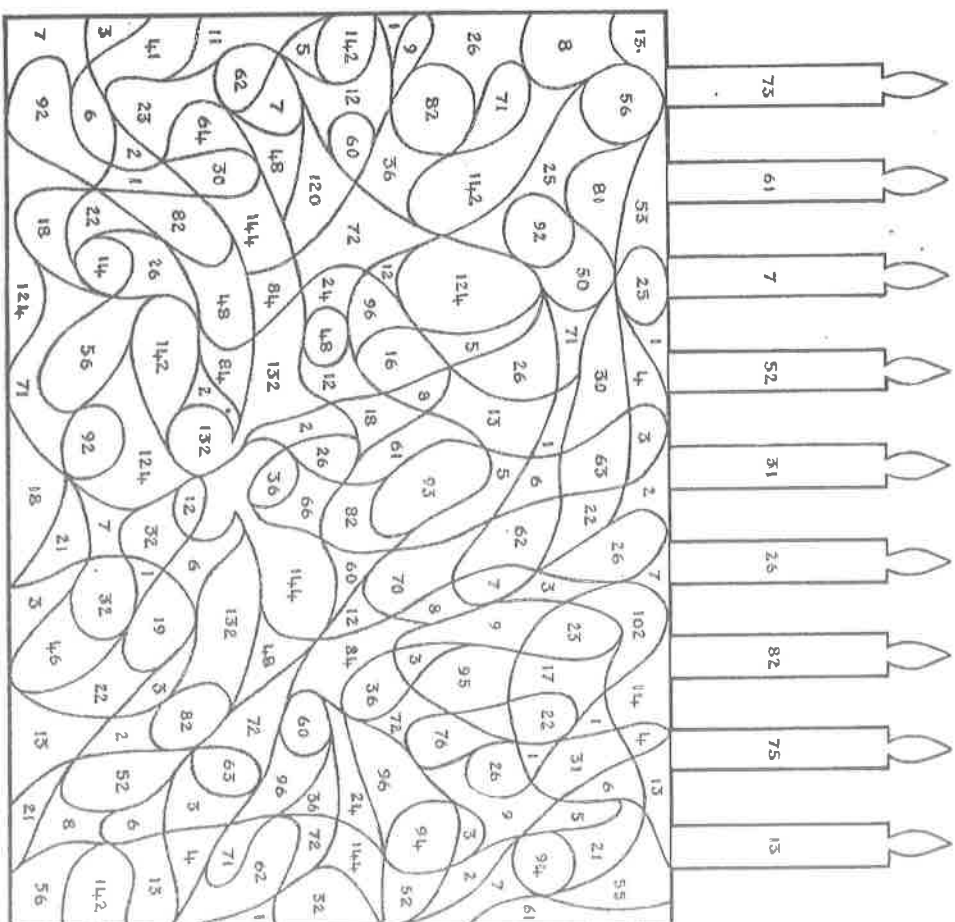
Make a pattern by colouring all the numbers which are multiples of 12.



Solve the puzzle picture opposite by colouring just those numbers which divide by 12.
What can you see?

Picture Puzzle

12 x table



Two numbers that add together are called bonds.

12 and 8 are bonds to 20 because $12 + 8 = 20$

35 and 65 are bonds to 100 because $35 + 65 = 100$

1 Circle the bonds in each set:

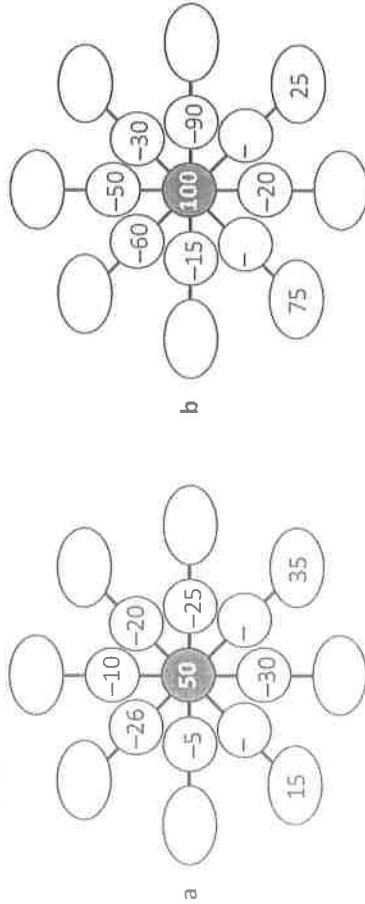
a Bonds to 20.
There are three to find. The first one has been done for you.

7	4	14
10	1	6
10	12	8

b Bonds to 50.
There are eight to find:

26	12	30	20
24	38	15	35
17	45	5	40
33	18	32	10

2 Complete these bond webs. Start with the centre number and subtract. Write your answers in the ovals:



3 Show how knowing the bonds to 20, 50 and 100 makes adding easier. You may want to circle the bonds first. The first one has been done for you.

- a $(80 + 20) + (15 + 5) = 100 + 20 = 120$
- b $18 + 2 + 30 + 20 + 10 + 10 =$
- c $25 + 25 + 40 + 30 + 20 + 10 =$
- d $15 + 35 + 20 + 30 + 10 + 12 =$

4 Complete the bonds to 50:

a $\square + 38 = 50$ b $\square + 17 = 50$

c $25 + \square = 50$ d $32 + \square = 50$

e $\square + 46 = 50$ f $\square + 28 = 50$

g $14 + \square = 50$ h $7 + \square = 50$

5 Complete the bonds to 100:

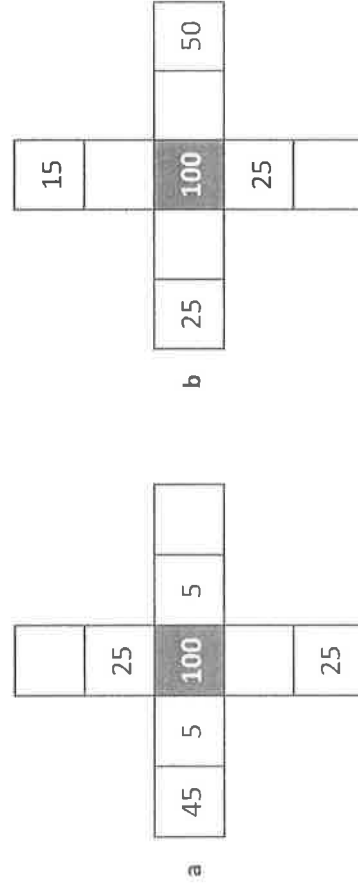
a $\square + 54 = 100$ b $\square + 22 = 100$

c $\square + 46 = 100$ d $33 + \square = 100$

e $62 + \square = 100$ f $25 + \square = 100$

g $\square + 45 = 100$ h $\square + 48 = 100$

6 Complete the addition crosses where the numbers add to 100 vertically and horizontally. The rules are, they must be symmetrical and only contain multiples of 5.



Addition mental strategies – doubles and near doubles

Doubles facts are the same number added together.

$$3 + 3 = 6 \text{ is the same as saying double 3 is 6.}$$

Near doubles is when you use the doubles fact and then adjust either by adding or subtracting.

See: $6 + 7$

Think: double $6 + 1$

1 Circle all the doubles facts.

The first two are circled for you.

Next, shade all the doubles facts $+1$, then the double facts -1 :

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

a double 1 =

double 2 =

double 3 =

double 4 =

double 5 =

double 6 =

double 7 =

double 8 =

double 9 =

b double $1 + 1 =$

double $2 + 1 =$

double $3 + 1 =$

double $4 + 1 =$

double $5 + 1 =$

double $6 + 1 =$

double $7 + 1 =$

double $8 + 1 =$

double $9 + 1 =$

c double $1 - 1 =$

double $2 - 1 =$

double $3 - 1 =$

double $4 - 1 =$

double $5 - 1 =$

double $6 - 1 =$

double $7 - 1 =$

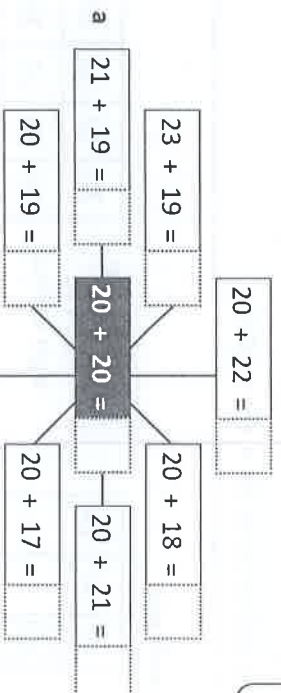
double $8 - 1 =$

double $9 - 1 =$

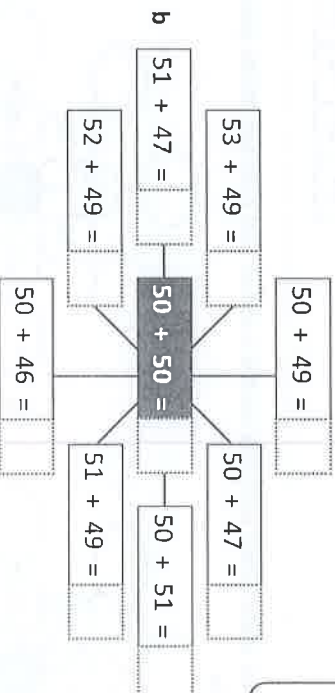
Addition mental strategies – doubles and near doubles

2 Complete each near double diagram. Start with the double in the centre and work clockwise. You will need to think in doubles and then adjust.

Start by looking at the first number.
For $21 + 18$, think double 20 add 1 and then subtract 2 so the answer is 39.



Start by looking at the first number.
For $51 + 48$, think double 50 add 1 and then subtract 2 so the answer is 99.



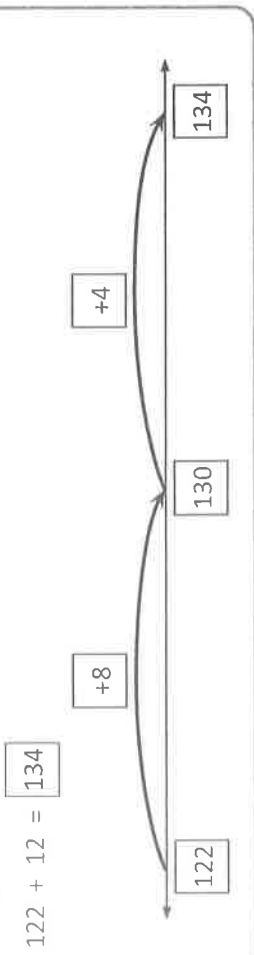
3 Show how you would explain to someone how to add each of these using near doubles.

a $30 + 32$

b $25 + 23$

c $100 + 97$

Bridge to ten is when we count on to the next 10 and then add what is left.



1 How many to the next ten? The first one has been done for you.

a $145 + 5 = 150$

c $558 + \square = \square$

e $346 + \square = \square$

b $243 + \square = \square$

d $167 + \square = \square$

f $179 + \square = \square$

2 Use the number lines to bridge to ten:

a $253 + 15 = \square$

b $464 + 14 = \square$

c $671 + 17 = \square$

3 Write a problem that matches the number line:

a $\square + \square = \square$

b $\square + \square = \square$

c $\square + \square = \square$

4 Complete these addition grids by bridging to the next ten in your head:

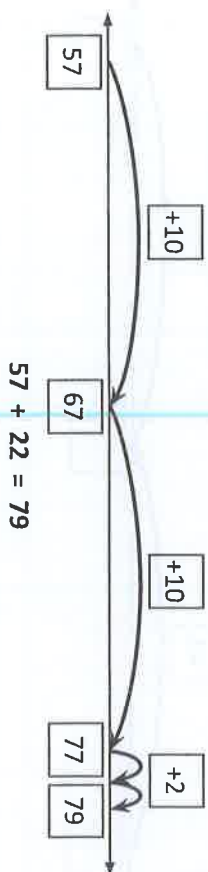
a	+	356	78	586	287	385	984
		12					

b	+	298	566	252	176	368	146
		16					

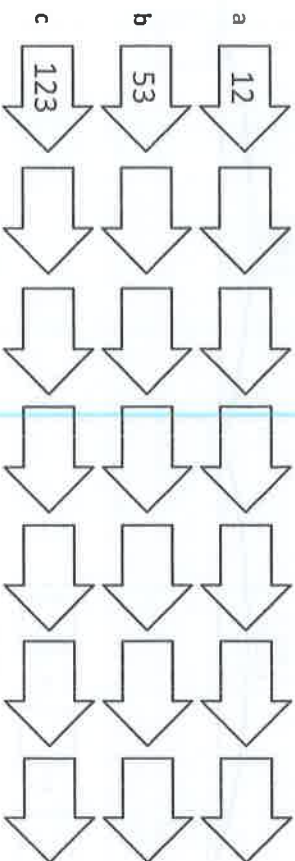
Addition mental strategies – jump strategy

When we add, we can use the jump strategy to help us. Look at $57 + 22$:

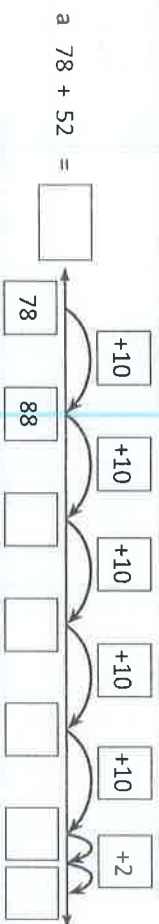
- 1 First we jump up by the tens.
- 2 Then we jump up by the ones.



1 Practise jumping in tens along the arrows:



2 Use the jump strategy to add these:



Addition mental strategies – jump strategy

- 3 Below are some number lines that only show the jumps. Complete the number line for the problem that matches and then write the complete problem.

$187 + 54$

$179 + 62$

$78 + 53$



- 4 Use the jump strategy to add these:

Cupcake sales				
Day	Red velvet	Lemon drop	Coconut	Chocolate
Saturday	165	82	55	135
Sunday	43	98	65	36

- a How many red velvet cupcakes were sold over the weekend?



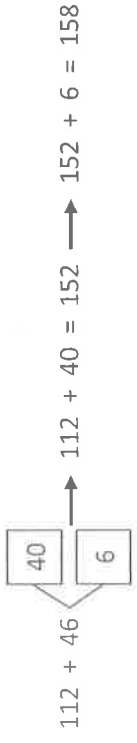
- b How many lemon drop and coconut cupcakes were sold on Saturday?



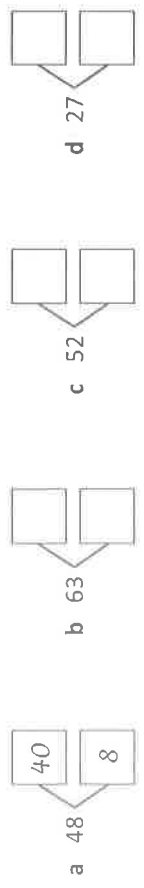
- c How many chocolate cupcakes were sold over the weekend?



When adding large numbers in our heads, it can be easier to split one of the numbers into parts and add each part separately.



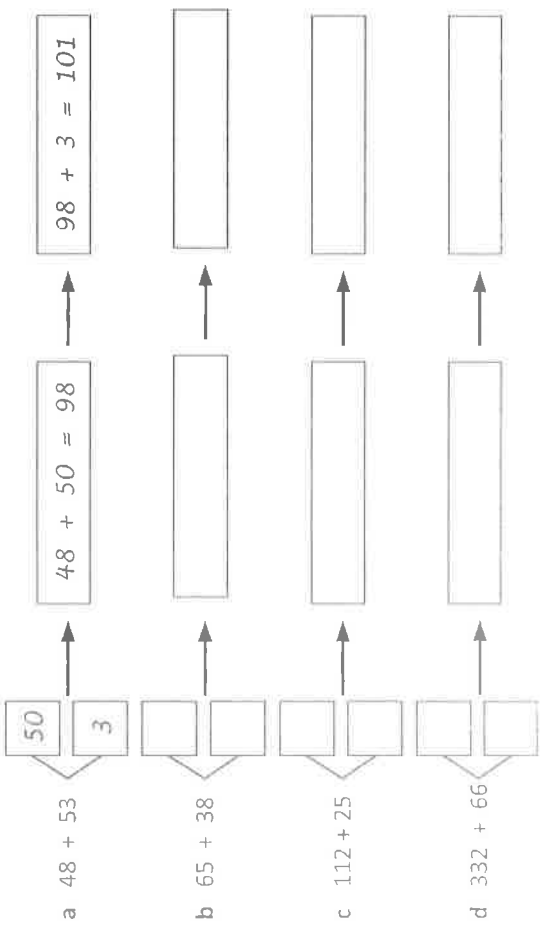
1 Practise separating these numbers into tens and ones. The first one has been done for you.



2 Practise adding the tens to these numbers:

+	20	50	30	70	60
123					
214					

3 Use the split strategy with these problems. The first one has been done for you.



Here is another way to use the split strategy.

$42 + 32 = (4 \text{ tens} + 3 \text{ tens}) + (2 \text{ ones} + 2 \text{ ones})$
 $= 7 \text{ tens} + 4 \text{ ones}$
 $= 74$

1 Use this way to add these:

a $63 + 37 = (\text{tens} + \text{tens}) + (\text{ones} + \text{ones})$
 $= \text{tens} + \text{tens} + \text{ones}$
 $=$

b $88 + 23 = (\text{tens} + \text{tens}) + (\text{ones} + \text{ones})$
 $= \text{tens} + \text{tens} + \text{ones}$
 $=$

c $56 + 15 = (\text{tens} + \text{tens}) + (\text{ones} + \text{ones})$
 $= \text{tens} + \text{tens} + \text{ones}$
 $=$

d $65 + 28 = (\text{tens} + \text{tens}) + (\text{ones} + \text{ones})$
 $= \text{tens} + \text{tens} + \text{ones}$
 $=$

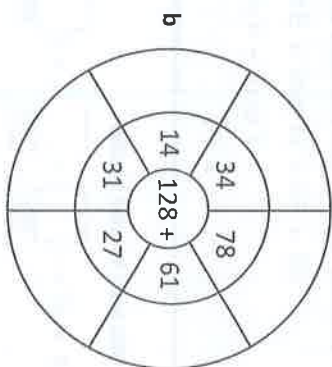
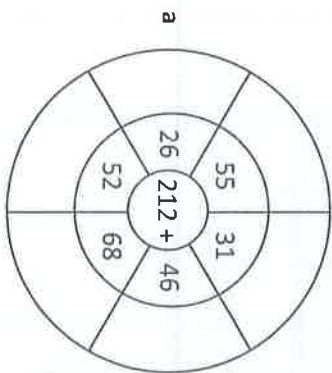


2 Use either version of the split strategy to complete this table:

+	23	78	63	55	36
45					
39					

Addition mental strategies – applying the split strategy

1 Complete these addition wheels with the split strategy:



The split strategy is useful when adding three 2-digit numbers.

Try adding tens, then the ones and recording it this way:

$$61 + 43 + 44 = 14 \text{ tens} + 8 \text{ ones} = 140 + 8 = 148$$

2 Record these place value amounts:

a 8 tens =

b 17 tens =

c 15 tens =

d 5 ones =

e 12 tens =

f 16 ones =

3 At circus school, a competition was held to see who could stay on a unicycle the longest. The time was recorded in seconds. Using the split strategy, add up each person's time. The first one has been done for you.

Names	Time in seconds	Working	Total in seconds
a Lizzie	22, 14, 3	3 tens + 9 ones	39
b Dan	23, 4, 11		
c Lily	21, 6, 14		
d Jo	20, 8, 12		
e Julio	4, 22, 12		



The winner is:

Addition mental strategies – compensation strategy

Sometimes we round one number in the problem to make it easier to do in our heads. Then we adjust our answer to compensate:

$$\begin{array}{rcl} 23 + 19 & = & 42 \\ 23 + 20 & -1 & \\ 43 - 1 & = & 42 \text{ so I subtract 1.} \end{array}$$

I rounded up by 1,

1 Practise rounding:

a	148 →	b	39 →	c	47 →
d	109 →	e	96 →	f	199 →

2 Use the compensation method with these problems. Round the second number up to the closest ten. Compensate by subtracting.

a 32 + 29 =

b 55 + 38 =

32 + 30

55 + 40

=

=

c 66 + 19 =

d 22 + 39 =

66 +

22 +

=

=

3 Now let's try the compensation method with rounding the second number down. Round these numbers down to the closest ten. Compensate by adding.

a $75 + 22 = \boxed{}$ b $45 + 41 = \boxed{}$

$75 + 20 = \boxed{}$ $45 + 40 = \boxed{}$

When we round down we compensate by adding.
When we round up we compensate by subtracting.

c $26 + 32 = \boxed{}$ d $66 + 53 = \boxed{}$

$26 + \boxed{} = \boxed{}$ $66 + \boxed{} = \boxed{}$



4 Use the compensation method to solve this riddle.
What vehicle is spelled the same forwards as it is backwards?
Match the letter to the answer in the grid at the bottom.

a $125 + 48 = \boxed{}$ A b $115 + 41 = \boxed{}$ R
c $55 + 51 = \boxed{}$ C d $715 + 28 = \boxed{}$ E

156	173	106	743	106	173	156			

Knowing one addition fact means you also know two related subtraction facts.
Because $7 + 3 = 10$ you know that $10 - 7 = 3$ and $10 - 3 = 7$

1 Make a group of facts for each pair of numbers. The first one has been done for you.

a

15

35

$15 + 35 = 50$
 $50 - 15 = 35$
 $50 - 35 = 15$

b

45

55

c

73

27

d

105

15

e

120

10

f

135

10

2 Complete each number trail:

a

150

$+10$

-15

$+50$

$+30$

b

200

-50

$+25$

-30

$+55$

c

99

$+11$

$+50$

$+50$

-20

d

76

$+24$

$+35$

$+15$

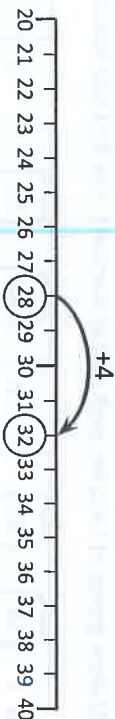
-25

Subtraction mental strategies – subtraction strategy review

Look for patterns: $6 - 2 = 4$ so $60 - 20 = 40$ and $600 - 200 = 400$

$72 - 9 = 63$ so $62 - 9 = 53$ and $52 - 9 = 43$

Count on:
When numbers are close together, you can count on to find the difference.



Bonds: $35 + 65 = 100$ so $100 - 35 = 65$

$12 + 8 = 20$ so $20 - 8 = 12$

Near doubles: See: $15 - 7$ Think: $(14 - 7) + 1$

1 This hundred grid makes it easier to see subtraction patterns. Use it to complete the sets.

	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	
11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30	
31	32	33	34	35	36	37	38	39	40	
41	42	43	44	45	46	47	48	49	50	
51	52	53	54	55	56	57	58	59	60	
61	62	63	64	65	66	67	68	69	70	
71	72	73	74	75	76	77	78	79	80	
81	82	83	84	85	86	87	88	89	90	
91	92	93	94	95	96	97	98	99	100	

Set 1	Set 2
$17 - 9 = \square$	$21 - 6 = \square$
$27 - 9 = \square$	$31 - 6 = \square$
$37 - 9 = \square$	$41 - 6 = \square$
$47 - 9 = \square$	$51 - 6 = \square$
$57 - 9 = \square$	$61 - 6 = \square$
$67 - 9 = \square$	$71 - 6 = \square$

2 Extend these subtractions according to the patterns:

a	$9 - 6 =$	$90 - 60 =$	$900 - 600 =$
b	$14 - 8 =$	$140 - 80 =$	$1,400 - 800 =$
c	$24 - 14 =$		
d	$69 - 32 =$		

Subtraction mental strategies – subtraction strategy review

3 Use counting on to complete these:

- a $32 - 29 = \square$ b $33 - 28 = \square$ c $34 - 27 = \square$
d $71 - 68 = \square$ e $82 - 76 = \square$ f $73 - 69 = \square$
g $83 - 77 = \square$ h $112 - 109 = \square$ i $201 - 196 = \square$

4 Complete these function tables using counting on:

a	In	Rule	Out
	120		
	123	$- 118$	
	126		
	124		

b	In	Rule	Out
	102		
	104	$- 96$	
	108		
	101		

c	In	Rule	Out
	87		
	81	$- 78$	
	85		
	83		

5 Complete this cross number puzzle. Using bonds to 100 will help.

1										

Across

- 1 $100 - 80 = \square$ 2 $100 - 89 = \square$ 3 $100 - 5 = \square$ 4 $100 - 28 = \square$ 5 $100 - 22 = \square$ 7 $100 - 64 = \square$

Down

- 1 $100 - 49 = \square$ 2 $100 - 61 = \square$ 3 $100 - 52 = \square$ 4 $100 - 66 = \square$ 5 $100 - 75 = \square$ 6 $100 - 11 = \square$

Subtraction mental strategies – subtraction strategy review

6 Use your knowledge of doubles and near doubles to complete these subtraction tables. The first one in each has been done for you.

See	Think
$19 - 9 =$	$(18 - 9) + 1$
$201 - 100 =$	
$141 - 70 =$	
$71 - 35 =$	

See	Think
$15 - 8 =$	$(16 - 8) - 1$
$31 - 16 =$	
$99 - 50 =$	
$87 - 44 =$	

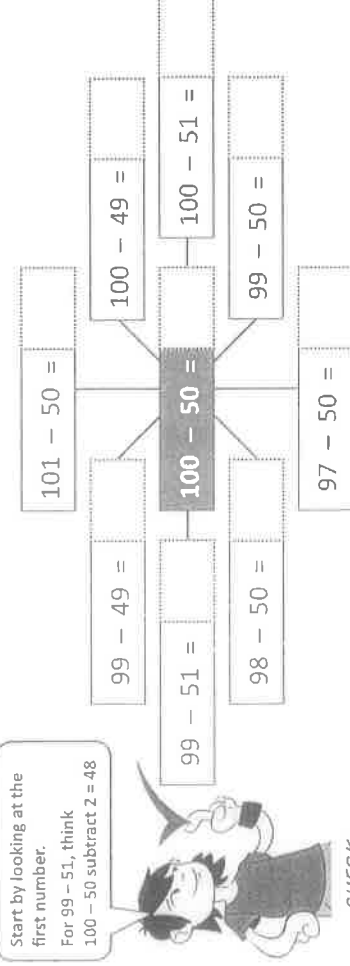
See	Think
$26 - 12 =$	$(24 - 12) + 2$
$52 - 25 =$	
$68 - 33 =$	
$104 - 51 =$	

See	Think
$24 - 13 =$	$(26 - 13) - 2$
$48 - 25 =$	
$70 - 36 =$	
$78 - 40 =$	

7 Complete this near double web, which is based on the subtraction double in the centre. Start in the centre and work clockwise:

Start by looking at the first number.

For $99 - 51$, think $100 - 50$ subtract 2 = 48

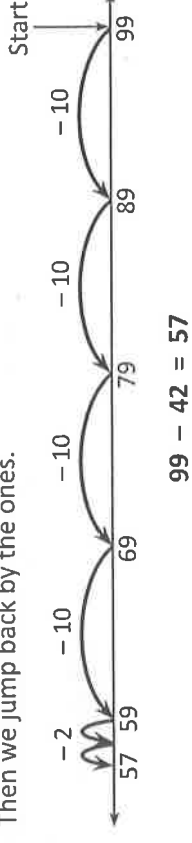


CHECK

Subtraction mental strategies – jump strategy

When we subtract, we can use the jump strategy to help us. Look at 99 – 42.

- 1 First we jump back by the tens.
- 2 Then we jump back by the ones.



1 Solve these using the jump strategy:

a $125 - 42 =$

$$b \ 168 - 36 =$$

c $335 - 54 =$

d $245 - 45 =$

Subtraction mental strategies – jump strategy

2 It's stocktake time at Candilicious sweet shop. Use the jump strategy to work out how many of each type of sweet has been sold.



Sweets	Started with	Amount left	Sold
Cinnamon drops	254	45	
Caramel melts	186	58	
Milk bottles	145	65	
Chocolate buttons	165	34	

a Cinnamon drops

$$\square - \square = \square$$

b Caramel melts

$$\square - \square = \square$$

c Milk bottles

$$\square - \square = \square$$

d Chocolate buttons

$$\square - \square = \square$$

Written methods – 3-digit addition with regrouping

e: 730

This is the written method for addition when regrouping. First, estimate the answer to the nearest ten: $530 + 200 = 730$

Add the ones: $4 + 7 = 11$ ones.

Think of this as 1 ten and 1 one.

Write the 1 in the ones column and put the 1 in the tens column.

Add the tens: $3 + 9 + 1 = 13$ tens.

Write 3 in the tens column and 1 in the hundreds column.

Add the hundreds: $5 + 1 + 1 = 7$ hundreds.

Is our answer reasonable? Yes, because it's close to our estimate.

H	T	O
5	3	4
+	1	9
7	3	1

1 Practise estimating answers by rounding to the nearest ten. The first one has been done for you.

Question	Estimate	Question	Estimate
a $682 + 179$	$680 + 180 \approx 860$	b $271 + 119$	
c $359 + 222$		d $378 + 119$	
e $587 + 398$		f $412 + 98$	
g $189 + 108$		h $911 + 207$	

2 Add these 3-digit numbers using the written method. First, estimate to the nearest ten.

e:

H	T	O
3	5	4
+	2	1

e:

H	T	O
6	2	8
+	2	1

e:

H	T	O
3	6	4
+	2	2

Written methods – 3-digit addition with regrouping

Continued from page 29.

2 Add these 3-digit numbers using the written method:

d

e:	H	T	O
	2	6	3
+	1	3	9

e

e:	H	T	O
	3	4	4
+	4	5	9

f

e:	Th	H	T	O
		2	5	2
+		2	4	9

g

e:	Th	H	T	O
		2	6	2
+		5	4	9

h

e:	Th	H	T	O
		6	2	9
+		2	8	9

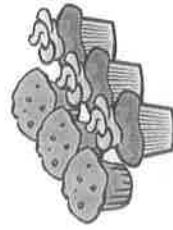
i

e:	Th	H	T	O
		3	4	9
+		3	8	7

3 Solve these word problems using the written method:

a At a muffin shop, 456 banana choc chip muffins were sold on Saturday and 458 caramel chunk muffins were sold on Sunday. How many muffins were sold that weekend?

	H	T	O
+			



b A train left the station with 389 people on board and then another 678 people got on over the next three stops. How many passengers were on the train altogether?

Th	H	T	O
+			



Written methods – 3-digit subtraction with regrouping

1 Subtract these 3-digit numbers using the written method. Start by writing your estimate. Estimate to the nearest 10.

a

e:	H	T	O
	6	5	2
-	3	2	7

b

e:	H	T	O
	7	6	1
-	2	2	9

c

e:	H	T	O
	5	9	2
-	4	4	8

You can use a piece of scrap paper to estimate your answer to the nearest 10.



CHECK

d

e:	H	T	O
	5	8	2
-	3	4	6

e

e:	H	T	O
	6	5	1
-	4	3	8

f

e:	H	T	O
	9	6	2
-	6	4	9

g

e:	H	T	O
	8	8	2
-	6	6	6

h

e:	H	T	O
	7	4	3
-	3	3	9

Written methods – 3-digit subtraction with regrouping

- 2 This sign shows the distances of towns along a highway from where the sign is. Find the difference between these places.



Showtown	971 km
Roper	893 km
Ringer	692 km
Eagle Bay	595 km
Normanville	567 km

- a What is the distance between Ringer and Normanville?

H	T	O

km

- b What is the distance between Roper and Eagle Bay?

H	T	O

km

- c What is the distance between Showtown and Ringer?

H	T	O

km

- d What is the distance between Roper and Normanville?

H	T	O

km

Written methods – 4-digit addition

- 1 Add these 4-digit numbers:

a

Th	H	T	O
3	3	5	3
+	1	0	2

b

Th	H	T	O
2	5	4	6
+	5	4	3

c

Th	H	T	O
4	5	2	4
+	2	1	6

d

Th	H	T	O
3	6	3	1
+	1	3	5

e

Th	H	T	O
1	2	5	2
+	5	3	3

f

Th	H	T	O
2	4	3	2
+	5	3	4

- 2 Add these 4-digit numbers by regrouping:

a

Th	H	T	O
6	6	3	8
+	1	2	3

b

Th	H	T	O
4	2	4	5
+	2	5	1

c

Th	H	T	O
3	4	2	9
+	1	1	3

- 3 Add these 4-digit numbers by regrouping:

a

Th	H	T	O
2	4	6	6
+	2	1	8

b

Th	H	T	O
3	1	8	7
+	3	0	5

c

Th	H	T	O
3	2	9	6
+	2	1	5

Written methods – 4-digit subtraction

1 Subtract these 4-digit numbers:

Th	H	T	O
6	4	9	3
3	2	7	1
-			

Th	H	T	O
4	2	7	5
4	0	6	5
-			

Th	H	T	O
8	4	7	9
3	4	5	6
-			

Th	H	T	O
7	1	6	3
4	0	2	0
-			

Th	H	T	O
3	2	9	8
3	0	6	4
-			

Th	H	T	O
9	9	3	6
8	1	3	3
-			

2 Subtract these 4-digit numbers by regrouping:

Th	H	T	O
5	4	3	6
3	3	1	8
-			

Th	H	T	O
2	7	2	8
1	5	4	7
-			

Th	H	T	O
6	3	4	7
2	6	1	5
-			

Th	H	T	O
4	5	7	2
2	6	5	4
-			

Th	H	T	O
9	3	1	4
8	1	5	7
-			

Th	H	T	O
5	8	1	5
3	7	8	9
-			

Written methods – addition and subtraction challenges

1 Write the numbers which are above each problem in the correct place:

a

4	3	9
3	6	2
+		7
7	9	

b

8	3	3	2
		6	5
-	4		
4			3

c

6	5	1
		3
+	2	
8	4	8

d

3	6	7
		5
-		2
2	4	3

2 Solve these. The same symbol means the same number.

a

◆	3	◆
◆	◆	4
+		
1	0	8

b

	6	2	9
	♥	♥	1
+			
1	1	4	4

c

★	8	★
3	★	2
-		
1	★	2

d

☺	4	1
2	3	☺
-		
3	0	6

Written methods – two-step word problems

When you are tackling a word problem in maths you need to read it carefully and ask yourself two key questions:

- 1 What are the important numbers?
- 2 What key words help me to understand which operations I need to use?

Sometimes there may be more than one step to the problem. Here's an example:

Mr Jones is sorting out the PE cupboard. He knows he had 90 tennis balls at the beginning of term. Y4 have borrowed 35. There are now 52 in the cupboard. How many balls are missing?

- 1 Numbers? 90, 35, 52

- 2 Key words/operations? 'borrowed' and 'missing' suggest subtraction

Step 1: $90 - 35 = 55$ There should be 55 balls in the cupboard.

Step 2: $55 - 52 = 3$ So 3 balls are missing.

1 Solve these two-step word problems:

- a Jayden has been collecting football cards. He has 120 in his collection. He lends 42 cards to his friends, but is worried that he may have lost some. He counts his cards and finds he has 74. Has he lost any? If so, how many?

- 1 Numbers?

- 2 Key words/operations?

Step 1:

Step 2:

Answer:

Written methods – two-step word problems

- b A Year 4 class earns 32 merit points in the first term of the year. In the second term they earn 47. If they have a total of 130 points by the end of the year, how many points did they earn in the third term?

- 1 Numbers?

- 2 Key words/operations?

Step 1:

Step 2:

Answer:

- c In the archery competition, our team, Riz and Dennis, scored 125 and 232. The winning team scored 480. How many less than the winning team did our team score?

- 1 Numbers?

- 2 Key words/operations?

Step 1:

Step 2:

Answer:

Read carefully!
What are the important numbers?
What are the key words?
What operations do I need?



RECUERDA

Written methods – two-step word problems

- b A Year 4 class earns 32 merit points in the first term of the year. In the second term they earn 47. If they have a total of 130 points by the end of the year, how many points did they earn in the third term?

- 1 Numbers?

- 2 Key words/operations?

Step 1:

Step 2:

Answer:

- c In the archery competition, our team, Riz and Dennis, scored 125 and 232. The winning team scored 480. How many less than the winning team did our team score?

- 1 Numbers?

- 2 Key words/operations?

Step 1:

Step 2:

Answer:

Read carefully!
What are the important numbers?
What are the key words?
What operations do I need?



RECUERDA

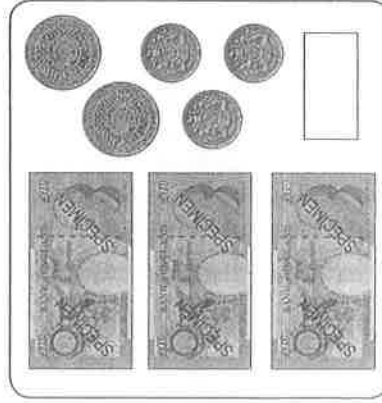
It is important that you are able to recognise these notes and coins so that you are able to spend and save your money wisely.



1 Calculate the total of each group of cash:



a



b



c



d

2 Make up each amount below using notes and coins in two different ways:

a Show £20:

b Show £50:

c Show £100:

Money – finding change

When you buy something and you don't have the exact combination of notes and coins, you can pay with a larger amount and get the difference back. This is called change. If I paid for these flowers with £20, my change would be £8.



1 Find the change for each amount below. You could bridge to the next pound and count on or use a written subtraction. Show all your workings:

a I had £100. I spent £68.

Change =

b I had £50. I spent £22.

Change =

c I had £20. I spent £16.50.

Change =

d I had £120. I spent £60.

Change =

e I had £100. I spent £75.

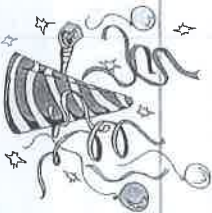
Change =

f I had £50. I spent £42.

Change =

Money – using money

When you plan a party, you usually buy things such as food, drink and party favours. It's a good idea to set a budget before you go shopping so that you don't spend too much.



1 Here is a price list of party items:

Food		Drink		Party favours	
Sausage rolls	£3.20	Orange juice	£2.75	10 party hats	£3.80
Pizza slices	£8.95	Lemonade	£3.10	10 balloons	£1.90
Burgers	£7.65	Cola	£3.25	4 game prizes	£5.60

a Which two items of food and drink could I buy for less than £10? Show the change.

Change =

b Maxine bought a type of party food. If her change was £2.35 and she paid with a £10 note, what did she buy?

Heidi's shopping list:

- 2 packs of sausage rolls ..
- 4 packs of pizza slices
- 10 party hats
- 20 balloons
- Orange juice
- Lemonade.....
- Total
- d Heidi's budget is £50. Suggest something to take off the total.

The 5 and 10 times tables are easier if you learn them together.

1 Answer the 5 times table:

- 1 $1 \times 5 =$
- 2 $2 \times 5 =$
- 3 $3 \times 5 =$
- 4 $4 \times 5 =$
- 5 $5 \times 5 =$
- 6 $6 \times 5 =$
- 7 $7 \times 5 =$
- 8 $8 \times 5 =$
- 9 $9 \times 5 =$
- 10 $10 \times 5 =$
- 11 $11 \times 5 =$
- 12 $12 \times 5 =$

2 Count in 5s down the ladders:

a

5

b

75

c

40

3 Fill in the missing number for each times table fact:

- a $\square \times 5 = 25$
- b $\square \times 5 = 45$
- c $\square \times 5 = 30$
- d $\square \times 5 = 50$
- e $\square \times 5 = 35$
- f $\square \times 5 = 40$



$3 \times 5 = 15$



$5 \times 3 = 15$

Turnaround facts are the times tables turned around!



REMEMBER

4 Complete the 5 times table turnarounds.

- a $5 \times 8 =$
- b $5 \times 3 =$
- c $5 \times 10 =$
- d $5 \times 4 =$

5 Answer the 10 times table:

- 1 $1 \times 10 =$
- 2 $2 \times 10 =$
- 3 $3 \times 10 =$
- 4 $4 \times 10 =$
- 5 $5 \times 10 =$
- 6 $6 \times 10 =$
- 7 $7 \times 10 =$
- 8 $8 \times 10 =$
- 9 $9 \times 10 =$
- 10 $10 \times 10 =$
- 11 $11 \times 10 =$
- 12 $12 \times 10 =$

6 Write the missing numbers for these 5 times table facts:

- a $\square \times 5 = 35$
- b $5 \times 5 =$
- c $\square \times 5 = 30$
- d $5 \times \square = 45$
- e $\square \times 5 = 15$
- f $5 \times \square = 10$
- g $5 \times \square = 20$

7 Write the missing numbers for these 10 times table facts:

- a $\square \times 10 = 30$
- b $10 \times 5 =$
- c $\square \times 10 = 20$
- d $10 \times 9 =$
- e $\square \times 10 = 60$
- f $\square \times 10 = 70$
- g $10 \times 10 =$

8 Follow the arrows by counting up in 10s:

10

→

→

→

→

→

→

→

→

→

→

→

9 Multiply each number in the top row by 5 and then by 10:

x	2	11	1	4	5	9	12	6	8	7	10	3
5												
10												

What do you notice?

Multiplication facts – 2 and 4 times tables

The 2 and 4 times tables are good facts to learn together.

1 Complete the skip counting pattern of 2:

2 4 ○ ○ ○ ○ ○ ○ ○ ○

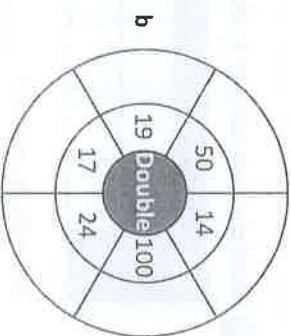
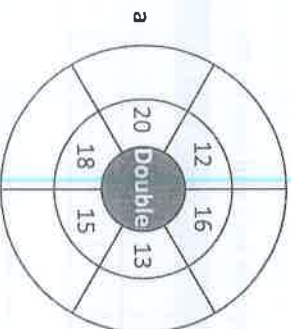
2 Answer the 2 times table. One is in order, the other is mixed up.

$1 \times 2 =$	$12 \times 2 =$
$2 \times 2 =$	$7 \times 2 =$
$3 \times 2 =$	$10 \times 2 =$
$4 \times 2 =$	$6 \times 2 =$
$5 \times 2 =$	$8 \times 2 =$
$6 \times 2 =$	$1 \times 2 =$
$7 \times 2 =$	$9 \times 2 =$
$8 \times 2 =$	$4 \times 2 =$
$9 \times 2 =$	$3 \times 2 =$
$10 \times 2 =$	$2 \times 2 =$
$11 \times 2 =$	$5 \times 2 =$
$12 \times 2 =$	$11 \times 2 =$

3 It is useful to be able to multiply numbers above 10 by 2. Try these:

$13 \times 2 =$	$14 \times 2 =$	$15 \times 2 =$	$16 \times 2 =$	$17 \times 2 =$	$18 \times 2 =$	$19 \times 2 =$	$20 \times 2 =$
-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

4 Complete these doubling wheels as quickly as you can. Multiplying by 2 is the same as doubling.



Now for the 4 times table. The 4 times table is just double the 2 times table. This is handy to remember if you forget a 4 times table fact.

Multiplication facts – 2 and 4 times tables

5 The 2 times table should be easier, so complete it first. Then double each of the 2 times table facts to get the 4 times table facts:

$1 \times 2 =$	$1 \times 4 =$
$2 \times 2 =$	$2 \times 4 =$
$3 \times 2 =$	$3 \times 4 =$
$4 \times 2 =$	$4 \times 4 =$
$5 \times 2 =$	$5 \times 4 =$
$6 \times 2 =$	$6 \times 4 =$
$7 \times 2 =$	$7 \times 4 =$
$8 \times 2 =$	$8 \times 4 =$
$9 \times 2 =$	$9 \times 4 =$
$10 \times 2 =$	$10 \times 4 =$
$11 \times 2 =$	$11 \times 4 =$
$12 \times 2 =$	$12 \times 4 =$

6 Write the missing numbers for these 4 times table facts:

a	$\square \times 4 = 8$
b	$\square \times 4 = 16$
c	$\square \times 4 = 40$
d	$\square \times 4 = 24$
e	$\square \times 4 = 12$
f	$\square \times 4 = 36$
g	$\square \times 4 = 20$
h	$\square \times 4 = 28$

7 Use the hint to get the answer. Then fill in the missing digit to make the 4 times table fact complete:

a	Hint: Double 16	$\square \times 4 = \square$
b	Hint: Double 12	$\square \times 4 = \square$
c	Hint: Double 18	$\square \times 4 = \square$

8 Look at the numbers in the grid and circle 3 numbers that would make a multiplication fact. Look for $\times 2$ and $\times 4$ facts. They are either left to right or top to bottom. The first one has been done for you. There are 10 to find.

4	3	12	4	8	32
4	1	3	2	7	1
16	5	3	8	2	9
3	4	6	24	14	4
2	8	16	7	9	36
9	2	18	10	2	20

Multiplication facts – 8 times table

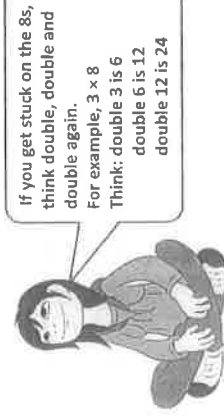
Here is the 8 times table. You can double the 4 times table to get the 8 times table.

- 1 Complete the 4 times table as quickly as you can. Then after you have checked them, double them to complete the 8 times table facts:

$1 \times 4 =$	$1 \times 8 =$
$2 \times 4 =$	$2 \times 8 =$
$3 \times 4 =$	$3 \times 8 =$
$4 \times 4 =$	$4 \times 8 =$
$5 \times 4 =$	$5 \times 8 =$
$6 \times 4 =$	$6 \times 8 =$
$7 \times 4 =$	$7 \times 8 =$
$8 \times 4 =$	$8 \times 8 =$
$9 \times 4 =$	$9 \times 8 =$
$10 \times 4 =$	$10 \times 8 =$
$11 \times 4 =$	$11 \times 8 =$
$12 \times 4 =$	$12 \times 8 =$

- 2 Use double, double and double again for these problems:

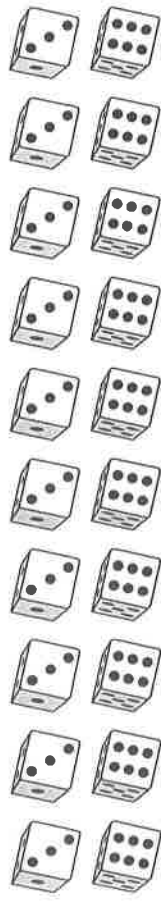
- a $6 \times 8 =$
b $4 \times 8 =$
c $9 \times 8 =$



- 3 On Mia's calculator, the 8 key is broken. Show her the steps she could follow to find the answer to 16×8 . Use a calculator to test the steps.

Multiplication facts – 3 and 6 times tables

Here are the 3 times and 6 times tables together. Can you think of why it's better to learn these facts together?



- 1 Use the picture of the dice above to complete both the 3 times table and the 6 times table:

$1 \times 3 =$	$1 \times 6 =$
$2 \times 3 =$	$2 \times 6 =$
$3 \times 3 =$	$3 \times 6 =$
$4 \times 3 =$	$4 \times 6 =$
$5 \times 3 =$	$5 \times 6 =$
$6 \times 3 =$	$6 \times 6 =$
$7 \times 3 =$	$7 \times 6 =$
$8 \times 3 =$	$8 \times 6 =$
$9 \times 3 =$	$9 \times 6 =$
$10 \times 3 =$	$10 \times 6 =$
$11 \times 3 =$	$11 \times 6 =$
$12 \times 3 =$	$12 \times 6 =$

- 2 Now try these mixed up:

- a $3 \times 6 =$
b $4 \times 3 =$
c $8 \times 3 =$
d $9 \times 6 =$
e $4 \times 6 =$
f $5 \times 3 =$
g $8 \times 6 =$
h $9 \times 3 =$
i $5 \times 6 =$

- 3 Fill in the missing digits to make these times table facts complete:

- a $3 \times 3 =$ b $\square \times 2 = 6$ c $\square \times 3 = 18$
d $6 \times \square = 36$ e $3 \times \square = 24$ f $\square \times 6 = 60$
g $\square \times 9 = 27$ h $6 \times \square = 42$ i $9 \times \square = 54$
j $5 \times \square = 30$ k $\square \times 6 = 48$ l $7 \times \square = 21$

Multiplication facts – 3 and 6 times tables

- 4 Match the answers to the questions. Each answer has two matching questions.

4×6

16×3

3×8

3×10

8×6



3×4

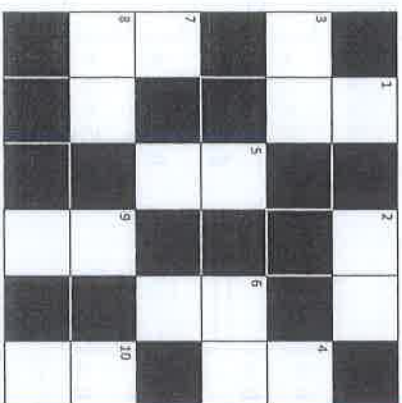
2×3

5×6

6×2

1×6

- 5 Complete the cross number puzzle:



Across

2. 9×3
3. 3×6
6. 5×6
8. 7×6

Down

1. 8×6
4. 10×6
5. 9×6
6. 6×6
7. 4×6
9. 6×3
10. 7×3

- 6 What number am I? I am in the 3 times table, 4 times table and 6 times table. I'm not 12.

I am

Multiplication facts – 6 times table



You know more times tables facts than you realise. For example, knowing your $\times 5$ can help with your $\times 6$.

The array shows 3 rows of 5. If we add another dot to each row we can change 3 rows of 5 to 3 rows of 6. This is called building up.

$3 \times 5 = 15 + 3 \longrightarrow 3 \times 6 = 18$

- 1 Change these $\times 5$ arrays into $\times 6$ arrays.

a



$2 \times 5 = \square + \square \longrightarrow 2 \times 6 = \square$

b



$4 \times 5 = \square + \square \longrightarrow 4 \times 6 = \square$

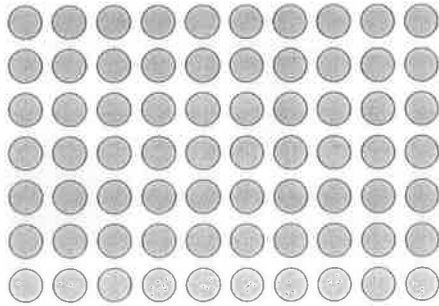
- 2 Complete this table to show how to change a $\times 5$ array to a $\times 6$ array by building up. The first one has been done for you.

	$\times 5$	Number to add	$\times 6$
a	$3 \times 5 = 15$	3	$3 \times 6 = 18$
b	$2 \times 5 = 10$		
c	$7 \times 5 = 35$		
d	$4 \times 5 = 20$		
e	$6 \times 5 = 30$		
f	$9 \times 5 = 45$		

Multiplication facts – 7 times table

Practise your 7 times table.

- 1 Use this array to complete the 7 times table:



- 1 $1 \times 7 =$
- 2 $2 \times 7 =$
- 3 $3 \times 7 =$
- 4 $4 \times 7 =$
- 5 $5 \times 7 =$
- 6 $6 \times 7 =$
- 7 $7 \times 7 =$
- 8 $8 \times 7 =$
- 9 $9 \times 7 =$
- 10 $10 \times 7 =$
- 11 $11 \times 7 =$
- 12 $12 \times 7 =$

- 2 Fill in the missing numbers:

- a $\times 7 = 63$
- b $\times 7 = 42$
- c $\times 7 = 21$
- d $\times 7 = 28$
- e $\times 7 = 35$
- f $\times 7 = 49$
- g $\times 7 = 56$

- 3 Complete these $\times 7$ facts. Look out for turnarounds.

- a $4 \times 7 =$ b $7 \times 7 =$ c $7 \times 2 =$
- d $7 \times 5 =$ e $9 \times 7 =$ f $7 \times 3 =$

- 4 Solve these problems.

- a Boxes of oranges hold 8 oranges each. If I have 7 boxes, how many oranges do I have altogether?
- b Our hockey team scored 3 goals in each of our 7 games. How many goals did we score in total?
- c There are 35 frogs in the glass cases at the zoo. Each case hold 7 frogs. How many cases are there?

Multiplication facts – 7 times table

If you get stuck on a 7 times table fact, remember the 8 times table fact and build down.

- 5 Think of the $\times 8$ table fact to get the $\times 7$ table fact.

$\times 8$ table	Number to subtract	$\times 7$ table
$1 \times 8 = 8$	1	$1 \times 7 =$
$2 \times 8 = 16$	2	$2 \times 7 =$
$3 \times 8 = 24$	3	$3 \times 7 =$
$4 \times 8 = 32$		$4 \times 7 =$
$5 \times 8 = 40$		$5 \times 7 =$
$6 \times 8 = 48$		$6 \times 7 =$
$7 \times 8 = 56$		$7 \times 7 =$
$8 \times 8 = 64$		$8 \times 7 =$
$9 \times 8 = 72$		$9 \times 7 =$
$10 \times 8 = 80$		$10 \times 7 =$
$11 \times 8 = 88$		$11 \times 7 =$
$12 \times 8 = 96$		$12 \times 7 =$

- 6 Add the missing numbers to each fact:

- a $\times 7 = 28$ b $\times 7 = 35$ c $\times 7 = 21$
- d $\times 7 = 42$ e $\times 7 = 49$ f $\times 7 = 14$

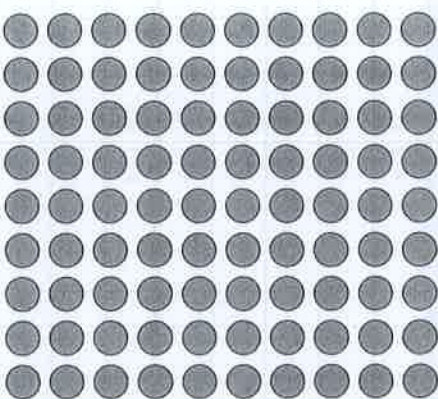
- 7 Use the $\times 8$ to complete the $\times 7$:

$\times$	11	4	2	6	1	12	9	5	3	7	8
8											
7											

Multiplication facts – 9 times table

Practise your 9 times table.

1 Use this array to complete the 9 times table:



- $1 \times 9 =$
 $2 \times 9 =$
 $3 \times 9 =$
 $4 \times 9 =$
 $5 \times 9 =$
 $6 \times 9 =$
 $7 \times 9 =$
 $8 \times 9 =$
 $9 \times 9 =$
 $10 \times 9 =$
 $11 \times 9 =$
 $12 \times 9 =$

2 Complete these $\times 9$ facts. Look out for turnarounds.

- a $3 \times 9 =$ b $9 \times 4 =$ c $6 \times 9 =$
 d $2 \times 9 =$ e $9 \times 5 =$ f $1 \times 9 =$

3 Find the cost of these items:

- a 6 fruit salads = b 4 banana splits =
 c 3 mango juices = d 5 fruit salads =
 e 3 banana splits = f 7 mango juices =



Multiplication facts – 9 times table

If you get stuck on a 9 times table fact, you can use the 10 times table facts and then build down.

$3 \times 9 =$



$3 \times 10 = 30 - 3 \rightarrow$ So, $3 \times 9 = 27$

If you want to check whether a number is in the 9 times table add its digits together. If the answer is 9, then it is! For example, if you add the digits of 27 together, you get $9 (2 + 7 = 9)$, so you know that 27 is in the 9 times table.



CHECK

4 Think of the $\times 10$ facts and build down to get the $\times 9$ facts. The first one is done for you.

$\times 10$ table	Number to subtract	$\times 9$ table
$1 \times 10 = 10$	1	$1 \times 9 = 9$
$2 \times 10 = 20$		
$3 \times 10 = 30$		
$4 \times 10 = 40$		
$5 \times 10 = 50$		
$6 \times 10 = 60$		
$7 \times 10 = 70$		
$8 \times 10 = 80$		
$9 \times 10 = 90$		
$10 \times 10 = 100$		
$11 \times 10 = 110$		
$12 \times 10 = 120$		

Can you see a pattern in the numbers in the 9 times table? As the numbers get larger the tens digit goes up one and the ones digit goes down one.



DISCOVER

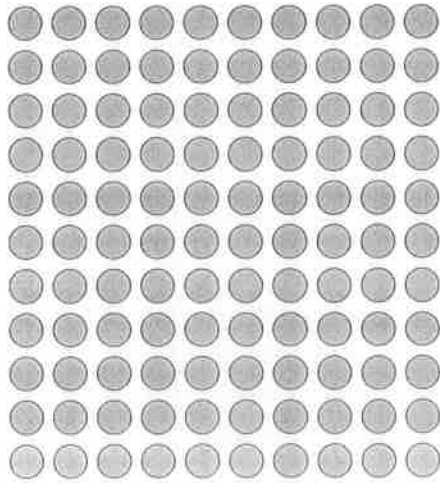
5 Complete the $\times 9$:

$\times$	2	6	4	8	12	3	9	10	5	7	11
9											

Multiplication facts – 11 times table

Practise your 11 times table. Can you see the pattern?

1 Use this array to complete the 11 times table:



- | | |
|------------------|----------------------|
| $1 \times 11 =$ | <input type="text"/> |
| $2 \times 11 =$ | <input type="text"/> |
| $3 \times 11 =$ | <input type="text"/> |
| $4 \times 11 =$ | <input type="text"/> |
| $5 \times 11 =$ | <input type="text"/> |
| $6 \times 11 =$ | <input type="text"/> |
| $7 \times 11 =$ | <input type="text"/> |
| $8 \times 11 =$ | <input type="text"/> |
| $9 \times 11 =$ | <input type="text"/> |
| $10 \times 11 =$ | <input type="text"/> |
| $11 \times 11 =$ | <input type="text"/> |
| $12 \times 11 =$ | <input type="text"/> |

2 Complete these $\times 11$ facts. Look out for turnarounds.

- | | | | | | |
|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|
| a $3 \times 11 =$ | <input type="text"/> | b $11 \times 5 =$ | <input type="text"/> | c $7 \times 11 =$ | <input type="text"/> |
| d $4 \times 11 =$ | <input type="text"/> | e $11 \times 9 =$ | <input type="text"/> | f $8 \times 11 =$ | <input type="text"/> |

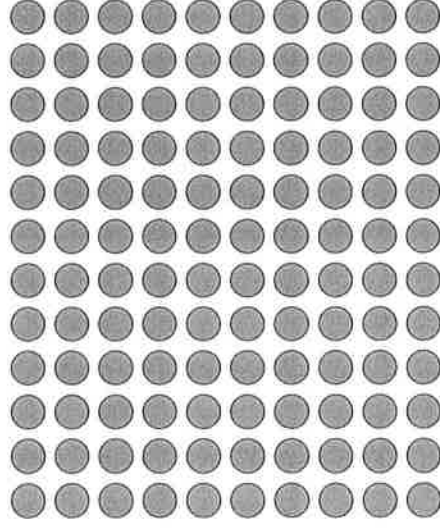
3 Solve these problems.

- There are 11 players in a football team and 10 teams in the league. How many players are there in total?
- On each of our 6 class tables is a pot containing 11 pencils. How many pencils are there altogether?
- On our school trip we split our class of 33 into groups of 11. How many children were in each group?

Multiplication facts – 12 times table

Practise your 12 times table.

1 Use this array to complete the 12 times table:



- | | |
|------------------|----------------------|
| $1 \times 12 =$ | <input type="text"/> |
| $2 \times 12 =$ | <input type="text"/> |
| $3 \times 12 =$ | <input type="text"/> |
| $4 \times 12 =$ | <input type="text"/> |
| $5 \times 12 =$ | <input type="text"/> |
| $6 \times 12 =$ | <input type="text"/> |
| $7 \times 12 =$ | <input type="text"/> |
| $8 \times 12 =$ | <input type="text"/> |
| $9 \times 12 =$ | <input type="text"/> |
| $10 \times 12 =$ | <input type="text"/> |
| $11 \times 12 =$ | <input type="text"/> |
| $12 \times 12 =$ | <input type="text"/> |

2 Complete these $\times 12$ facts. Look out for turnarounds.

- | | | | | | |
|-------------------|----------------------|-------------------|----------------------|-------------------|----------------------|
| a $3 \times 12 =$ | <input type="text"/> | b $12 \times 5 =$ | <input type="text"/> | c $7 \times 12 =$ | <input type="text"/> |
| d $4 \times 12 =$ | <input type="text"/> | e $12 \times 3 =$ | <input type="text"/> | f $12 \times 9 =$ | <input type="text"/> |

3 Solve these problems.

- I make 3 batches of 12 cookies. How many cookies is this altogether?
- A florist is selling bunches of 12 roses. She sells 6 bunches. How many roses is this?
- Eggs cost £3 for a dozen? If I spend £15 on eggs, how many eggs have I bought in total?

Using known facts – factors and multiples

When 2 numbers are multiplied together, the answer is called a multiple.
The first 3 multiples of 2 are 2, 4, 6.

$$1 \times 2 = 2$$

$$2 \times 2 = 4$$

$$3 \times 2 = 6$$

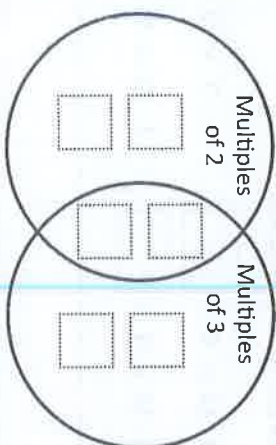
5, 10, 15, 20, 25, 30, 35, 40, 45, 50 are the first 10 multiples of 5.

1 List the first 12 multiples of each number:

a	6											
b	2											
c	10											
d	3											
e	4											

2 Write these numbers in the correct spots on the Venn diagram:

8 4 9 6 12 3



The space in the diagram where the circles overlap is where you put numbers that are both multiples of 2 and 3.



THINK

3 Can you think of any other numbers up to 60 that could go into the overlapping space in the Venn diagram above?

Using known facts – factors and multiples

Factors are numbers that you multiply together to give a multiple.



$$3 \times 6 = 18$$



$$2 \times 9 = 18$$

These arrays show some of the factors of 18: 3, 6, 2 and 9.

Can you think of any other factors of 18?

4 Complete the number sentence for each set of arrays and then list the factors.



$$\square \times \square = \square$$



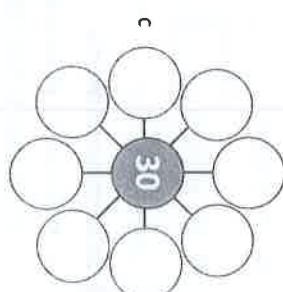
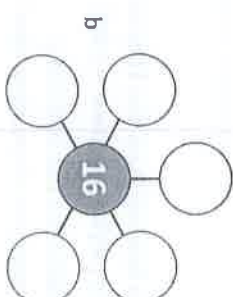
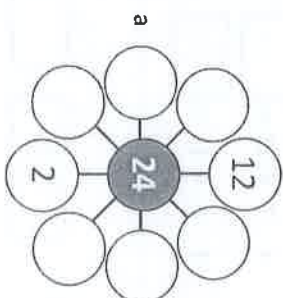
$$\square \times \square = \square$$



$$\square \times \square = \square$$

d The factors of 12 are: _____

5 Complete each diagram to show the factors of the number in the middle circle:



Mental multiplication strategies – multiplying by 10 and 100

When we multiply any whole number by 10, the number is getting 10 times bigger. This means that each digit moves one place value column to the left and we use 0 as a place holder in the ones column.

When we multiply any whole number by 100 the number gets 100 times bigger. This means that each digit moves two place value columns to the left and we use 0 as a place holder in the ones and tens columns.

Thousands	Hundreds	Tens	Units
		4	5
	4	5	0
4	5	0	0

1 Use the place value tables to multiply these numbers by 10 and 100:

a

Th	H	T	O
		1	5

b

Th	H	T	O
		4	8

c

Th	H	T	O
		7	2



2 Use patterns to solve these:

a	$14 \times 1 =$	$14 \times 10 =$	$14 \times 100 =$
b	$25 \times 1 =$	$25 \times 10 =$	$25 \times 100 =$
c	$82 \times 1 =$	$82 \times 10 =$	$82 \times 100 =$

Mental multiplication strategies – multiplying by 10 and 100

How do you multiply by other multiples of 10? Let's look at 8×20 . We can use known times tables facts and write this as place value amounts:

$$8 \times 2 \text{ tens} = 16 \text{ tens So, } 8 \times 20 = 160$$

3 Draw lines from the numbers written as place value amounts to the times tables facts:

10 tens	14 tens	36 tens	27 tens	12 tens	16 tens
3 x 4 tens	4 x 4 tens	5 x 2 tens	7 x 2 tens	6 x 6 tens	9 x 3 tens

4 Write the digit that represents each place value amount:

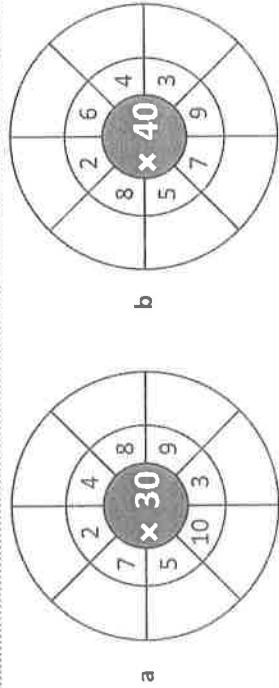
a 10 tens =	b 36 tens =	c 12 tens =
d 15 tens =	e 22 tens =	f 8 tens =
g 19 tens =	h 16 tens =	i 18 tens =

5 First complete the hints and then use them to write the facts:

Hints:

a $4 \times 6 \text{ tens} =$	tens	$4 \times 60 =$
b $9 \times 2 \text{ tens} =$	tens	$9 \times 20 =$
c $2 \times 7 \text{ tens} =$	tens	$2 \times 70 =$

6 Complete the number wheels:



Mental multiplication strategies – multiplying/dividing by 0 and 1

If you **multiply by 0** the answer will always be 0.

5×0 means '5 lots of 0', which is nothing.

The answer is not going to change, whether you have 5 or 35 or 3,005 lots of nothing. The answer will always be zero.

Multiplying by 1 is also very simple.

8×1 means '8 lots of 1'.

73×1 means '73 lots of 1', which is 73.

So if you multiply any number by 1 the answer will always be the number with which you started.

Dividing by 1 is straightforward too. If we divide a number, we are working out how many equal groups can be made from that number. So, $10 \div 1$ means 'we have 10 and we want to make one group with it'. How many will be in that one group? The answer is 10. So, as with multiplying by 1, you always end up with your starting number when you divide by 1.

$$3 \div 1 = 3$$

$$333 \div 1 = 333$$

$$33\,333 \div 1 = 33\,333$$

(In case you are wondering, **you can't divide by 0**. We can't split, say, a bag of sweets into groups of nothing – it doesn't make any sense to divide a number by zero. It can't be done. We say that dividing by 0 is **undefined**.)

1 Solve these calculations:

a $6 \times 1 =$

b $9 \div 1 =$

c $11 \times 0 =$

d $59 \times 0 =$

e $73 \times 1 =$

f $3 \times 1 = 3$
 $3 \div 1 = 3$
 $3 \times 0 = 0$
 $3 \div 0 = \text{impossible!}$

f $43 \div 1 =$

g $848 \div 1 =$

h $666 \times 0 =$

i $424 \times 1 =$

j $999 \div 1 =$

k $0 \times 0 =$

l $2344 \times 1 =$

m $74 \div 0 =$



3 $\times$ 1 = 3
3 $\div$ 1 = 3
3 $\times$ 0 = 0
3 $\div$ 0 = impossible!

Mental multiplication strategies – multiplying 3 numbers

There is a law in maths called the **Commutative Law**. This states that for certain types of calculation, the order of the numbers doesn't matter. The answer will be the same. It is true for addition.

$$3 + 4 = 7$$

$$4 + 3 = 7$$

$$62 + 19 = 71$$

$$19 + 62 = 71$$

The same is true for multiplication.

$$5 \times 2 = 10$$

$$2 \times 5 = 10$$

$$8 \times 7 = 56$$

$$7 \times 8 = 56$$

If you are multiplying more than two numbers, the Commutative Law still applies.

$$3 \times 2 \times 6 = 36$$

$$6 \times 2 \times 3 = 36$$

$$2 \times 6 \times 3 = 36$$

$$2 \times 3 \times 6 = 36$$

$$6 \times 3 \times 2 = 36$$

$$3 \times 6 \times 2 = 36$$

1 Solve these multiplications:

a $4 \times 4 \times 2 =$

b $3 \times 10 \times 5 =$

c $7 \times 3 \times 2 =$

d $5 \times 8 \times 3 =$

e $6 \times 3 \times 2 =$

f $10 \times 8 \times 10 =$

2 Using the Commutative Law, create two different correct multiplications using the same numbers:

a $13 \times 23 \times 8 = 2392$

$\times$ $\times$ = 2392

$\times$ $\times$ = 2392

b $7 \times 14 \times 26 = 2548$

$\times$ $\times$ = 2548

$\times$ $\times$ = 2548

Does the Commutative Law work for subtraction and division too?



THINK

There are many double facts that you should know.
This includes numbers outside the times tables we have been working on.
Here are 2 double facts that are handy to know:
double 15 is 30 double 50 is 100 Can you think of more?

1 Complete these function machines:

Double	
IN	OUT
15	30
24	
30	
45	
18	

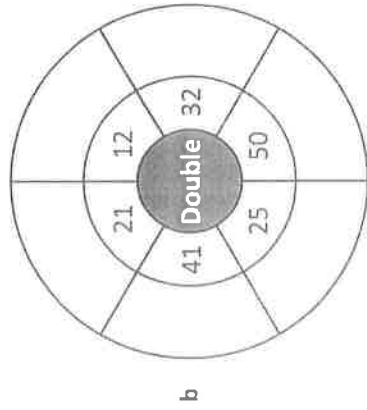
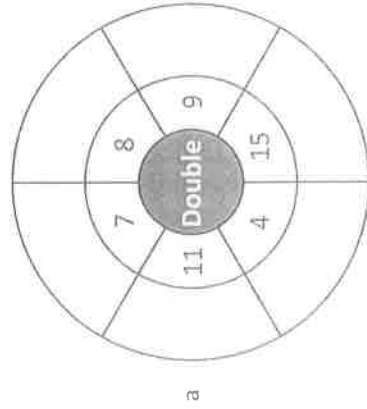
Double-double	
IN	OUT
15	60
24	
30	
45	
50	

Can you see what double-double is the same as? Yes, that's right, it's the same as $\times 4$.



REMEMBER

2 Complete these doubling wheels:



We also use doubling when we multiply by 4 and by 8.

To multiply a number by 4,
double it twice.

$10 \times 4 = 40$	
Double 10 once	20
Double 10 twice	40

To multiply a number by 8,
double it 3 times.

$11 \times 8 = 88$	
Double 11 once	22
Double 11 twice	44
Double 11 three times	88

3 Keep doubling to get the $\times 4$ and $\times 8$ facts. Here are some tables to help you. The first one has been done for you.

$12 \times 4 =$	48
Double 12 once	24
Double 12 twice	48

$15 \times 4 =$	
Double 15 once	
Double 15 twice	

$18 \times 4 =$	
Double 18 once	
Double 18 twice	

$22 \times 4 =$	
Double 22 once	
Double 22 twice	

$16 \times 8 =$	
Double 16 once	
Double 16 twice	
Double 16 three times	

$35 \times 8 =$	
Double 35 once	
Double 35 twice	
Double 35 three times	



In this last table choose a 2-digit number to multiply by 8 and double it three times.

$\square \times 8 =$	
Double $\square$ once	
Double $\square$ twice	
Double $\square$ three times	

Mental multiplication strategies – split strategy

The split strategy is when we multiply numbers in 2 pairs and then add the parts. Let's use the split strategy for 26×4 .

- Split 26 into 20 and 6.
- Multiply each part.
- Add the answers together.

$$26 \times 4 \longrightarrow 20 \times 4 + 6 \times 4$$

$$80 + 24 = 104$$

$$\text{So, } 26 \times 4 = 104$$

1 Use the split strategy to answer these:

a $34 \times 3 \longrightarrow 30 \times 3 + 4 \times 3$

$$90 + \boxed{} = \boxed{}$$

$$\text{So, } 34 \times 3 = \boxed{}$$

b $45 \times 5 \longrightarrow \boxed{} \times \boxed{} + \boxed{} \times \boxed{}$

$$\boxed{} + \boxed{} = \boxed{}$$

$$\text{So, } 45 \times 5 = \boxed{}$$

c $52 \times 4 \longrightarrow \boxed{} \times \boxed{} + \boxed{} \times \boxed{}$

$$\boxed{} + \boxed{} = \boxed{}$$

$$\text{So, } 52 \times 4 = \boxed{}$$

Mental multiplication strategies – compensation strategy

Use the compensation strategy to make it easier to multiply 2-digit numbers that are close to a ten.

Look at 4×19 .

19 is close to 20, so we can multiply by the next multiple of ten which is 20. Then we build down because we have an extra group of 4.

$$4 \times 19 \longrightarrow 4 \times 20 = 80 - 4$$

$$\text{So, } 4 \times 19 = 76$$

1 Use the compensation strategy to answer these:

a $5 \times 29 \longrightarrow 5 \times \boxed{} = \boxed{} - \boxed{}$

$$\text{So, } 5 \times 29 = \boxed{}$$

b $3 \times 49 \longrightarrow 3 \times \boxed{} = \boxed{} - \boxed{}$

$$\text{So, } 3 \times 49 = \boxed{}$$

c $4 \times 39 \longrightarrow 4 \times \boxed{} = \boxed{} - \boxed{}$

$$\text{So, } 4 \times 39 = \boxed{}$$

2 Use the compensation strategy to answer these questions. This time you need to look for more than one extra group to subtract:

a $4 \times 18 \longrightarrow 4 \times \boxed{} = \boxed{} - \boxed{}$

$$\text{So, } 4 \times 18 = \boxed{}$$

b $3 \times 17 \longrightarrow 3 \times \boxed{} = \boxed{} - \boxed{}$

$$\text{So, } 3 \times 17 = \boxed{}$$

We have rounded up to 20. So instead of 4×18 we have 4×20 . This is 2 more groups of 4. So we subtract 8.



THINK

Mental multiplication strategies – word problems

- 3 Jimmy lines up his soldiers in lines of 9. If he has 8 lines, how many soldiers does he have?

- 4 There are 15 toys in a tin. Lily has 8 tins. How many toys does she have altogether?

- 5 Eggs come in boxes of a dozen. Our local shop has 14 boxes on its shelves. How many eggs is this?

- 6 Mike and I are playing darts. On my first throw I score 3 double 15s. Mike's score is twice mine. How many do we score between us?

Read carefully!

What are the important numbers?
What are the key words?

What operations do I need?
What is the best strategy?

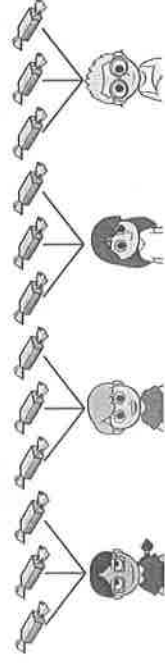


REMEMBER

Division – division is sharing and grouping

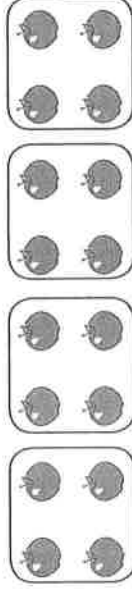
Division can mean sharing or grouping.

There are 12 lollies shared between 4 kids. How many are in each share?



$$12 \div 4 = 3$$

There are 16 apples and 4 go into each basket. How many baskets do I need?



$$16 \div 4 = 4$$

1 Solve these sharing and grouping questions:

- a There are 9 cupcakes and 3 kids are sharing. How many are in each share?



$$\square \div \square = \square$$



- b 10 lollies are shared between a group of kids so they each get 2. How many kids are sharing?



$$\square \div \square = \square$$

- c There are 24 pencils and 6 pencil pots. How many pencils go into each pencil pot?



$$\square \div \square = \square$$



Mental multiplication strategies – word problems

- 3 Jimmy lines up his soldiers in lines of 9. If he has 8 lines, how many soldiers does he have?

- 4 There are 15 toys in a tin. Lily has 8 tins. How many toys does she have altogether?

- 5 Eggs come in boxes of a dozen. Our local shop has 14 boxes on its shelves. How many eggs is this?

- 6 Mike and I are playing darts. On my first throw I score 3 double 15s. Mike's score is twice mine. How many do we score between us?

Read carefully!

What are the important numbers?
What are the key words?

What operations do I need?
What is the best strategy?



REMEMBER

Division – division is sharing and grouping

- 2 Draw pictures to show these division questions. Then write the division fact and decide whether it is a sharing or a grouping question.

If you need to find out how many items there are in each share, it's a sharing question. If you need to find out the number of equal shares, it's a grouping question.



CHECK

- a Divide 16 lollies between 4 girls. How many does each girl get?

$$\square \div \square = \square$$

sharing / grouping

- b From a packet of 24 pencils, each person will get 6. How many people are sharing the pencils?

$$\square \div \square = \square$$

sharing / grouping

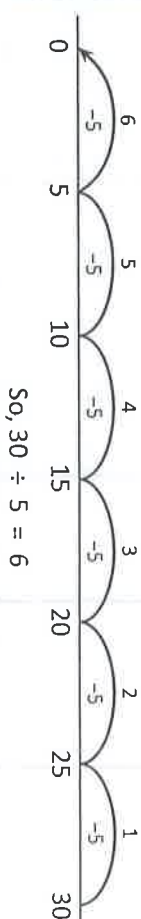
- c 48 eggs are laid by 6 hens. If they all laid the same amount, how many did each hen lay?

$$\square \div \square = \square$$

sharing / grouping

Division – division is repeated subtraction

Division can also be thought of as repeated subtraction. Look at $30 \div 5 = \square$? This question is asking how many groups of 5 there are in 30. Jump in 5s along the number line and then count the jumps.



- 1 Show these division facts as repeated subtraction. First label the number lines and then show the jumps.

a $36 \div 6 = \square$



b $21 \div 3 = \square$



- 2 Write a division fact to match these number lines. Show the jumps.

a $\square \div \square = \square$

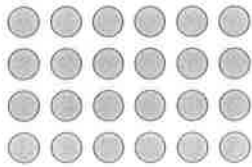


b $\square \div \square = \square$



Division – linking multiplication and division facts

Knowing multiplication facts will help with division facts. This is because they are opposites. Look at how we can describe this array:



$$6 \times 4 = 24 \quad \text{6 groups of 4 is 24.}$$

$$4 \times 6 = 24 \quad \text{4 groups of 6 is 24.}$$

$$24 \div 4 = 6 \quad \text{24 divided into 4 shares is 6.}$$

$$24 \div 6 = 4 \quad \text{24 divided into 6 shares is 4.}$$

1 Describe each of these arrays using two multiplication and two division facts:



a

	$\times$		=	
	$\times$		=	
	$\div$		=	
	$\div$		=	



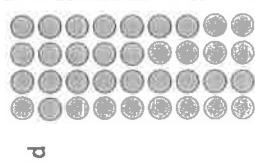
b

	$\times$		=	
	$\times$		=	
	$\div$		=	
	$\div$		=	



c

	$\times$		=	
	$\times$		=	
	$\div$		=	
	$\div$		=	



d

	$\times$		=	
	$\times$		=	
	$\div$		=	
	$\div$		=	

2 Draw an array of 6 rows of 3 then describe it with multiplication and division facts.

	$\times$		=	
	$\times$		=	
	$\div$		=	
	$\div$		=	



REMEMBER

Division – linking multiplication and division facts

3 Write a fact family for each set of numbers in the triangle. The first one has been done for you.

a

	$\times$		=	
	$\times$		=	

	$\div$		=	
	$\div$		=	

b

	$\times$		=	
	$\times$		=	

	$\div$		=	
	$\div$		=	

c

	$\times$		=	
	$\times$		=	

	$\div$		=	
	$\div$		=	

d

	$\times$		=	
	$\times$		=	

	$\div$		=	
	$\div$		=	

4 For these problems, think of a multiplication fact to help write the division fact:

a £25 is shared between 5 people. How much does each person get?

	$\times$		=	
	$\div$		=	

b 45 people get into 9 cars. How many people are in each car?

	$\times$		=	
	$\div$		=	

Mental division strategies – dividing by 10 and 100

When we divide any number by 10, we move the number one place value space to the right because the number is getting 10 times smaller.

When we divide any number by 100, we move the number two place value spaces to the right because the number is getting 100 times smaller.

Thousands	Hundreds	Tens	Ones
6	7	0	0
	6	7	0
		6	7

1 Use the place value tables to divide these numbers by 10 and 100.

Th	H	T	O
5	3	0	0

÷ 10

÷ 100

Th	H	T	O
4	1	0	0

÷ 10

÷ 100

Th	H	T	O
8	4	0	0

÷ 10

÷ 100

Th	H	T	O
2	4	0	0

÷ 10

÷ 100

2 Use patterns to solve these:

a $1400 \div 1 =$ $1400 \div 10 =$ $1400 \div 100 =$

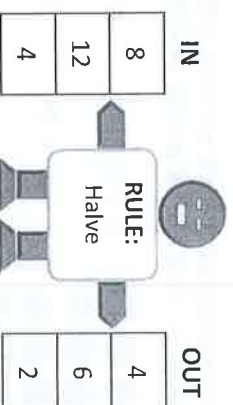
b $5600 \div 1 =$ $5600 \div 10 =$ $5600 \div 100 =$

c $3500 \div 1 =$ $3500 \div 10 =$ $3500 \div 100 =$

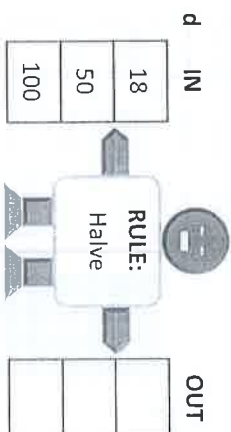
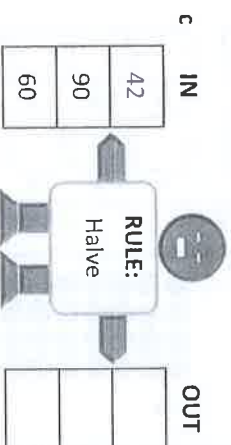
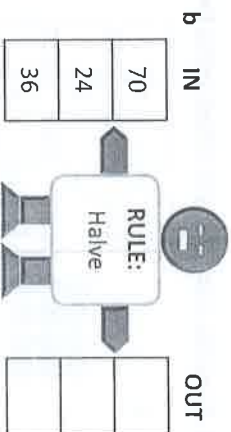
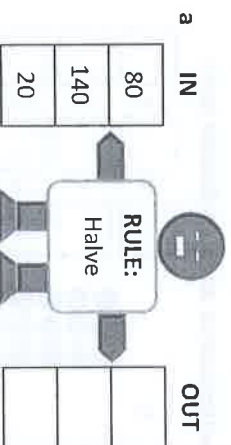
3 Use a calculator to solve these: a $270 \div 100 =$ b $49 \div 10 =$

Mental division strategies – halving strategy

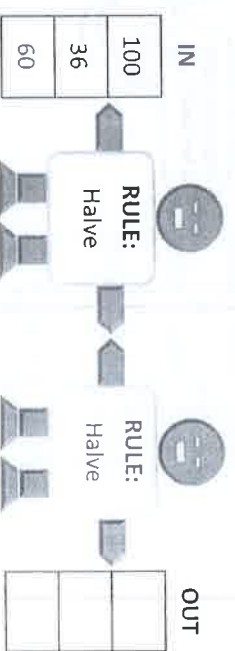
When you halve numbers you are dividing them by 2. In this function machine, numbers go IN, have the rule applied and come OUT again.



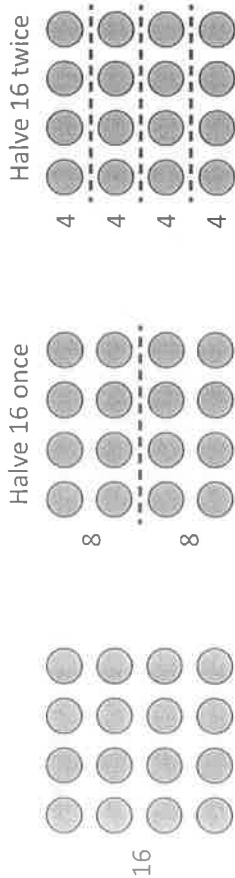
1 Complete the halving function machines. Halve the number going IN the machine and write the answer in the OUT column:



2 Below is a halving-halving function machine. The number goes IN and is halved and then halved again and comes OUT.



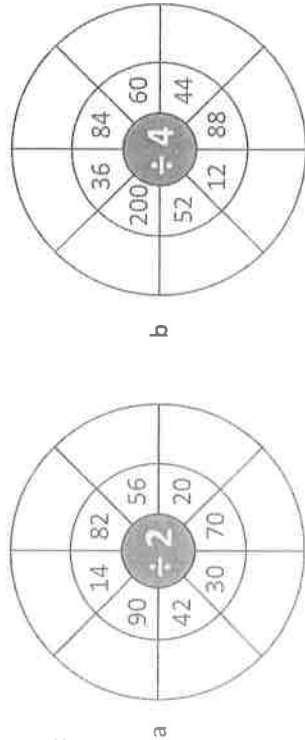
We also use halving-halving to divide by 4. Look at these diagrams:



3 Use the tables for halving-halving to divide by 4:

a	$80 \div 4 =$	$48 \div 4 =$
	Halve 80 once	Halve 48 once
	Halve 80 twice	Halve 48 twice
c	$64 \div 4 =$	$120 \div 4 =$
	Halve 64 once	Halve 120 once
	Halve 64 twice	Halve 120 twice
e	$244 \div 4 =$	$88 \div 4 =$
	Halve 244 once	Halve 88 once
	Halve 244 twice	Halve 88 twice

4 Complete the division wheels:



Division problems can be much easier to solve if you split the number.

Look at $125 \div 5$.

Can we split the number into two multiples of 5?

Yes, we can split 125 into 100 and 25.

We divide each part by 5 and then add the two answers together.

$$\begin{array}{r} 125 \div 5 \\ \swarrow \searrow \\ 100 \quad 25 \\ \div 5 \quad \div 5 \\ 20 \quad + \quad 5 = 25 \end{array}$$

1 Use the split strategy to divide these by 5:

a $115 \div 5$ $135 \div 5$

$\div 5$ $\div 5$ $\div 5$ $\div 5$

$\div 5$ $\div 5$ $\div 5$ $\div 5$

2 Use the split strategy to divide these by 4:

a $64 \div 4$ $116 \div 4$

$\div 4$ $\div 4$ $\div 4$ $\div 4$

$\div 4$ $\div 4$ $\div 4$ $\div 4$

3 Use the split strategy to divide these by 3:

a $330 \div 3$ $612 \div 3$

$\div 3$ $\div 3$ $\div 3$ $\div 3$

$\div 3$ $\div 3$ $\div 3$ $\div 3$

Mental division strategies – word problem

- 5 Jon needs to buy some files. They cost £9 each. He has £72.
How many files can he buy?

- 6 Andy loves astronomy. He's worked out that he can see about 32 000 stars with his new telescope. If there are about 100 stars visible in any one galaxy. How many galaxies can he see?

- 7 Kate has been planting trees. She has planted a total of 155 trees in rows of 5. How many rows has she planted?

- 8 Charles is saving up to buy a new bike. The bike costs £170. He gets £74 for his birthday, and £4 pocket money a week. How many weeks will he have to save until he can get the bike?

Written methods – short multiplication

	H	T	O
		5	4
x			3
	1	6	2
			1

Start with the ones. $4 \times 3 = 12$ ones.

Rename this as 1 ten and 2 ones. Put the 2 in the ones column and regroup the 1 to the tens column.

3×5 plus the regrouped 1 is 16 tens.

Rename this as 1 hundred and 6 tens.

1 Practise these problems:

a

	H	T	O
		4	2
x			9

b

	H	T	O
		3	8
x			7

c

	H	T	O
			2
x			5

d

	H	T	O
		2	6
x			4

e

	H	T	O
		5	5
x			8

f

	H	T	O
			6
x			2

g

	H	T	O
		8	6
x			6

h

	H	T	O
		9	3
x			5

i

	H	T	O
			7
x			7

Written methods – short multiplication

2 Solve these multiplications:

a

Th	H	T	O
	1	2	3
x			4

b

Th	H	T	O
	2	5	6
x			6

c

Th	H	T	O
	1	8	7
x			8

d

Th	H	T	O
	3	4	2
x			7

e

Th	H	T	O
	4	6	5
x			5

f

Th	H	T	O
	6	7	8
x			9

3 Use short multiplication to solve these word problems:

a On a farm, 6 lambs were born every day over 25 days. How many lambs were born in total?

H	T	O
x		

b For my school fete day, I baked 9 trays of cupcakes. If there are 14 cupcakes on each tray, how many did I bake in total?

H	T	O
x		

Written methods – short division

Another way to represent division is with the division symbol.

$$\begin{array}{r} \text{T} \quad \text{O} \\ 6 \overline{) 36} \end{array}$$

This is the same as $36 \div 6 = 6$

If the answer is a single digit, it should go in the ones column.

1 Solve these division problems using the division symbol:

a $5 \overline{) 35}$

b $4 \overline{) 28}$

c $9 \overline{) 18}$

d $6 \overline{) 54}$

e $2 \overline{) 14}$

f $4 \overline{) 16}$

g $5 \overline{) 25}$

h $7 \overline{) 49}$

i $8 \overline{) 48}$

2 Use the division symbol to solve each problem:

a 42 cupcakes were iced by 7 kids. If they each iced the same amount, how many did they ice each?

b How many pots were used if 6 seeds were planted in each pot from a packet of 54?

c I run the same distance each day. Over 9 days the total distance is 72 km. How far did I run each day?

Written methods – short division with 3-digit numbers

In short division with 3-digit numbers we split the number:

468 is $400 + 60 + 8$
 400 divided by 2 is 200, so we put a 2 in the hundreds place.
 60 divided by 2 is 30, so we put a 3 in the tens place.
 8 is divided by 2 is 4, so we put a 4 in the ones place.

H	T	O
2	3	4
2		4
		6
		8

1 Practise splitting these:

a 368 is $\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$ b 445 is $\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

c 567 is $\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$ d 235 is $\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

2 Now put these split numbers back together:

a $500 + 70 + 8$ is $\underline{\hspace{2cm}}$ b $700 + 90 + 4$ is $\underline{\hspace{2cm}}$

c $200 + 40 + 6$ is $\underline{\hspace{2cm}}$ d $800 + 50 + 5$ is $\underline{\hspace{2cm}}$

3 Solve these division problems with 3-digit numbers:

a $\begin{array}{r} \square \square \square \\ 4 \overline{) 844} \end{array}$ b $\begin{array}{r} \square \square \square \\ 3 \overline{) 693} \end{array}$

c $\begin{array}{r} \square \square \square \\ 2 \overline{) 842} \end{array}$ d $\begin{array}{r} \square \square \square \\ 2 \overline{) 488} \end{array}$

4 Here are two division problems with missing numbers in the questions. Find out the missing numbers by using the numbers that are part of the answer as clues.

a $\begin{array}{r} \square \square \square \\ 4 \overline{) \square \square \square} \end{array}$ b $\begin{array}{r} \square \square \square \\ 3 \overline{) \square \square \square} \end{array}$

Written methods – short division with 3-digit numbers

Sometimes we need to split the number a different way,

for example: $515 = 500 + 15$
 500 divided by 5 is 100, so we put a 1 in the hundreds place.
 15 divided by 5 is 3, so we put a 3 in the ones place.
 What goes in the tens place?
 A zero does. The zero has the very important job of keeping the other numbers in their place!

H	T	O
1	0	3
5		1
		5

5 Practise these problems. We have put the zero in to remind you:

a $\begin{array}{r} \square \square \square \\ 4 \overline{) 812} \end{array}$ b $\begin{array}{r} \square \square \square \\ 3 \overline{) 924} \end{array}$

c $\begin{array}{r} \square \square \square \\ 3 \overline{) 912} \end{array}$ d $\begin{array}{r} \square \square \square \\ 4 \overline{) 824} \end{array}$

6 Practise these problems. This time, you need to remember the zero!

a $\begin{array}{r} \square \square \square \\ 3 \overline{) 918} \end{array}$ b $\begin{array}{r} \square \square \square \\ 6 \overline{) 612} \end{array}$

c $\begin{array}{r} \square \square \square \\ 4 \overline{) 832} \end{array}$ d $\begin{array}{r} \square \square \square \\ 4 \overline{) 816} \end{array}$

Statistics – asking questions and collecting data

Data is information. We collect data to help us find out about the world. Data can be in the form of numbers, words or pictures. We organise and record data so that we can look at it easily and learn more.

- 1 The type of question you ask guides the data results, so it's important to ask the right questions. Imagine that you are planning a birthday party and your mum says that you can serve either hot dogs or pizza. You decide to survey your guests before the party. Which question will get you the data that you need? Underline it.

What is your favourite food?

Do you prefer hot dogs or pizza?

- 2 For their end of season celebration, Adele's netball coach has said that the team can either go to the water slide park or go to the movies. Adele has to email her team mates to find out the most popular choice. She is about to email this question, 'What would you like to do for our end of season party?'

a What is wrong with asking this question?

b Write a better question for her to ask:

- 3 Here are three kids who are about the same age as you. Look at their answers. What questions were asked to get this data?

Question	Jo	Jess	Max
a	spaghetti	hamburgers	chocolate
b	blue	pink	yellow
c	March	November	January

Statistics – asking questions and collecting data

- 4 Did you know that most peoples' eyes are either blue, brown or green? In this table, 4B collected data on the different coloured eyes in their class.

How many pairs of each eye colour are in 4B?	
Blue	6
Brown	15
Green	4

What are some other questions that you can answer with this data? Think of two:

1.

2.

- 5 Now collect data on the different coloured eyes in your class and compare the data to 4B.

a Write a question above the data table as the heading.

Blue		
Brown		
Green		

b What is one statement you can make about the two data sets?

The tally method is where we count in 5s. We put a stroke for each number and the fifth one is a line that goes diagonally through.



1 Find the total of each tally amount:

a

b

c

d

2 Molly is keeping a training diary where she records the laps she runs around the field near her house. Redo this data using the tally method.

Molly's training	
Monday	
Wednesday	
Friday	

Molly's training	
Monday	
Wednesday	
Friday	

3 A movie theatre collected data on the number of kids and adults that attended a recent movie screening. A kid's ticket is all ages up to 15 and an adult's ticket is 16 and above.

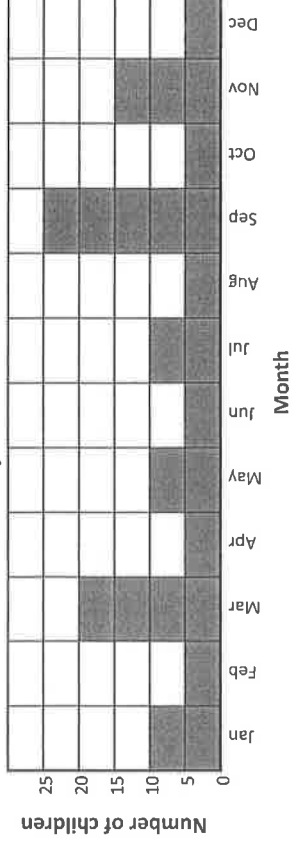
a Count how many kids' tickets and how many adults' tickets were sold using the tally method in this table:

Type of ticket	Amount sold											
Kids												
Adults												

b Why do you think they conducted this survey?

1 Answer the questions about the data in the bar chart. The scale goes up in 5s.

Birthday months at our school

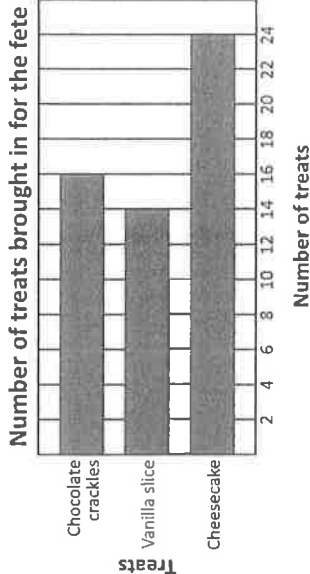


a How many birthdays are there in the first 3 months of the year?

b How many kids are born in May, June or July?

c September has 10 more birthdays than which month?

2 Sometimes bar charts go vertically. This time the horizontal line has the scale and the vertical line has the different categories. This graph shows how many of each sweet treat was brought in for the school fete.



Notice how the scale goes up in 2s.

Write something that this graph shows you:

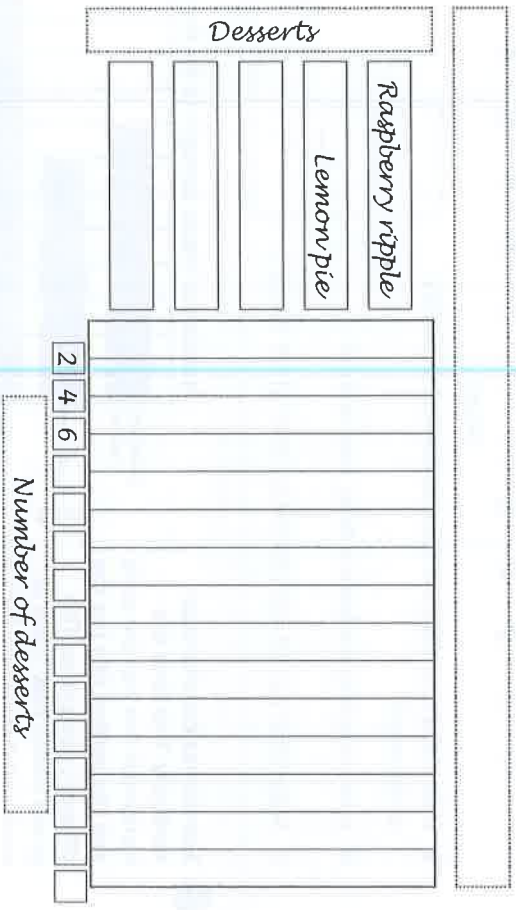
Statistics – bar charts

3 Jo from Jo-Jo's Cafe recorded the desserts that customers ordered over the weekend.

a Show the total of each dessert that was ordered in this table:

Dessert	Tally	Total
Raspberry ripple		
Lemon pie		
Banana split		
Caramel swirl		
Cookie crunch		

b Show this data on the bar chart below. Complete the scale and all the labels.
Give the graph a heading.

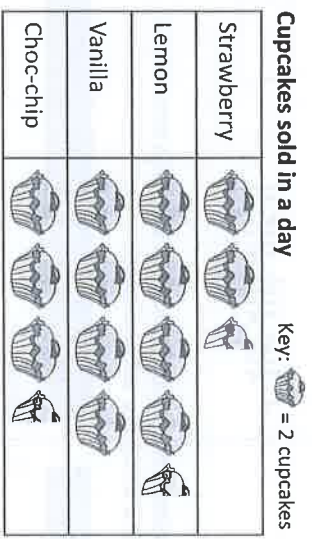


- c The most popular dessert was _____.
- d Cookie crunch was twice as popular as _____.
- e Jo wants to remove a dessert from the menu. Which one should she remove and why?

Statistics – pictograms

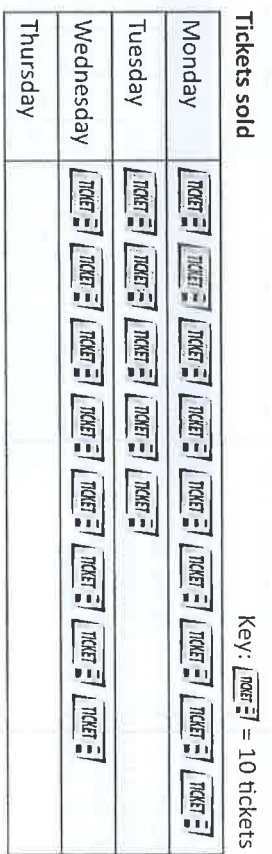
Pictograms use pictures to show how many items are in each category. The have a title that tells us the data that has been collected. A key tells us the value of the symbol. In the first pictogram below, we can see that one whole cupcake stands for 2 actual cupcakes. Half a cupcake stands for 1.

1 This pictogram shows the amount of cupcakes sold in each flavour:



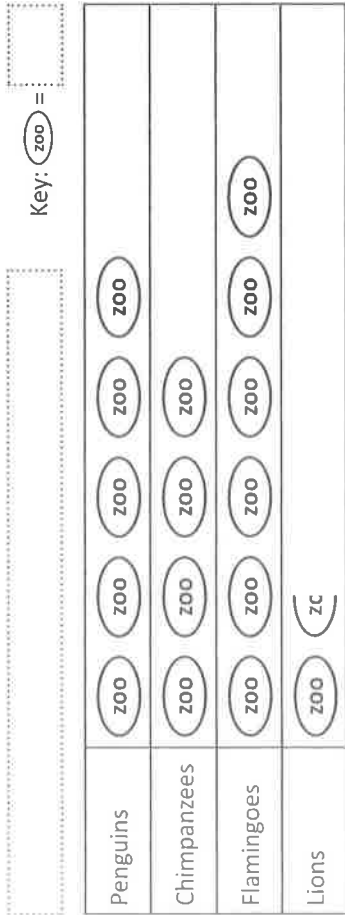
- a How many lemon cupcakes were sold?
- b How many choc-chip cupcakes were sold?
- c How many were sold altogether?

2 This pictogram shows the number of tickets sold each day in the week leading up to the Friday night school concert. Answer the questions that follow:

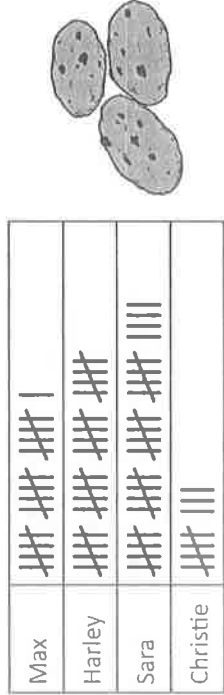


- a How many tickets were sold on Monday night?
- b How many fewer tickets were sold on Tuesday night compared to Wednesday night?
- c 65 tickets were sold Thursday night, add this to the graph.

- 3 Alexis and Xavier went to the zoo and counted the different animals that they saw. They saw 20 penguins, 16 chimpanzees, 25 flamingoes and 6 lions. Show this data in the pictogram below. Use (zoo) to represent 4 animals. Add a heading.



- 4 Here are the results of a charity drive where a group of kids worked together to sell cookies to raise money for the homeless. Help them turn the tally data into a picture graph to present in assembly. Use  for 4 boxes of cookies. Add a heading.

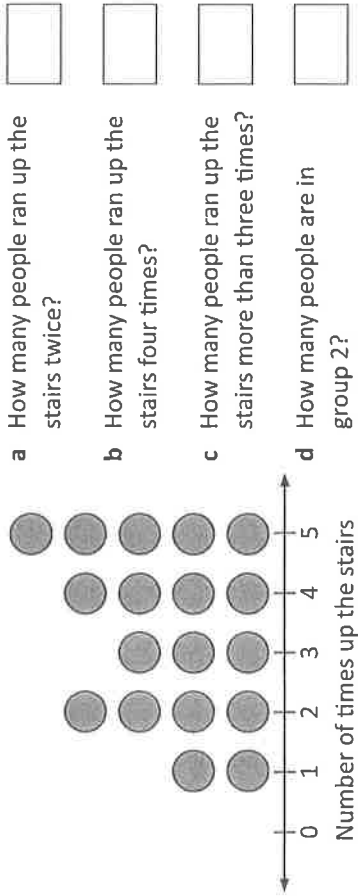


Max	
Harley	
Sara	
Christie	

A dot plot uses a number line where the numbers are the categories. The dots show the amount in each category.

- 1 Two groups competed to see how many times they could run up and down a flight of stairs. Here are the results for Group 2. Answer the questions below:

Group 2 stairs results



- 2 Ellie kept a record of the number of weekly table points her group scored over the term. Present this data as a dot plot.

2	5	3	5	5	5	3	4	2	2	5
---	---	---	---	---	---	---	---	---	---	---

Table points for Ellie's group

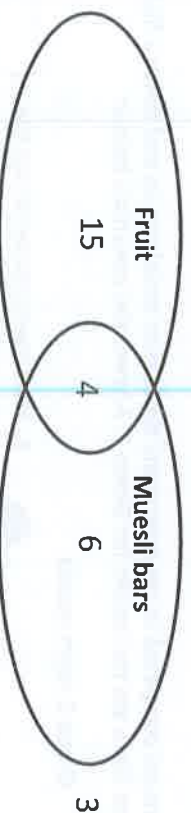
- a In this class, if a table earns 5 points in a week they get extra play time. How many times did Ellie's group get extra play time over the term?
- b How many weeks are there in the school term that this data is for?



Statistics – Venn diagrams

A Venn diagram also shows lots of information in a small space.

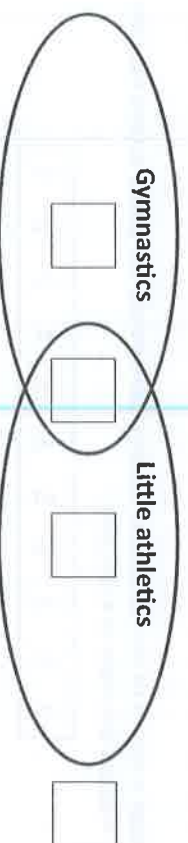
This Venn diagram shows what 45 eat at playtime.



This shows us that:

- 15 kids just eat fruit
- 6 kids just eat muesli bars
- 4 kids eat both fruit and muesli bars
- 3 kids eat neither fruit or muesli bars
- there are 28 kids in 45.

1 Use the clues listed to complete the Venn diagram:



Clues:

30 kids were surveyed about which after-school activity they would prefer, gymnastics or little athletics.

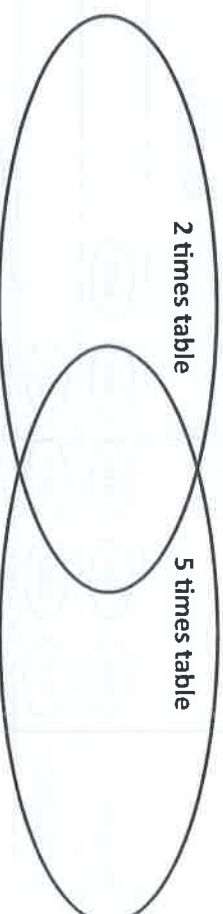
- 10 kids want to do both
- 5 kids don't want to do either sport
- 8 kids want to do gymnastics.

We haven't said how many just wanted to do little athletics but you can work it out from the clues.

Statistics – Venn diagrams

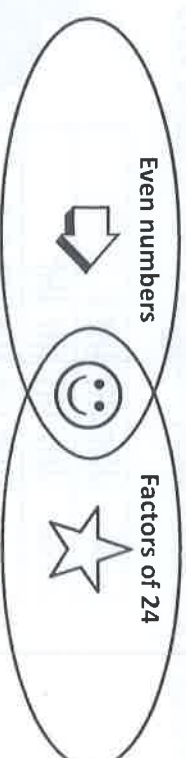
2 Place these numbers in the Venn diagram:

25 16 30 4 40 8 10 15 20



3 Show where these numbers go in the Venn diagram by listing them next to the matching symbol:

16 2 20 8 3 12 10 4 40 6 24 1







A Carroll diagram can show a lot of information in a small space.
Look at this Carroll diagram that organises information about shapes.

	Is symmetrical	Is not symmetrical
Has 4 sides		
Does not have 4 sides		

1 Two families went on holiday to Dream Land. Organise this information in the diagram below:

- Mel went on the mega drop twice but did not go on the dodgem cars.
- Lily screamed the loudest on the mega drop and shared the dodgem car ride with her brother.
- Harley was too short to go on the mega drop but loved the dodgem cars.
- Tash was persuaded by her friend Bec to go with her on both the mega drop and the dodgems.
- Ben was sick so he had to stay home with his Gran.

	Did not go on mega drop	Went on mega drop
Went on dodgem cars		
Did not go on dodgem cars		

2 Sort this data in the Carroll diagram below. You will need to label the columns and the rows. One column is labelled for you.

- 15 people like strawberries but not bananas.
- 26 people like both strawberries and bananas.
- 18 people like bananas but not strawberries.
- 8 people like neither strawberries or bananas.

	Like strawberries	

3 Sort the data in the diagrams below:

a 53 100 28 25 36 80 33 60 75 81

	Multiple of 4	Not multiple of 4
Less than 50		
Not less than 50		

b 40 6 54 25 12 60 29 32 50 24

	Divisible by 6	Not divisible by 6
Greater than 36		
Not greater than 36		

Statistics – surveys

- 1** A group of your friends are keen to start training for the sports carnival at lunch times. You would like to start a club where you can share healthy eating plans and training tips. If you get enough interest, Mr Gain has said he will let you have the assembly hall on Wednesdays. However, he wants you to show him carefully presented data such as how many kids are interested and what grade they are in. Use a software program to prepare a survey and present your results.

a Design a question.

Question

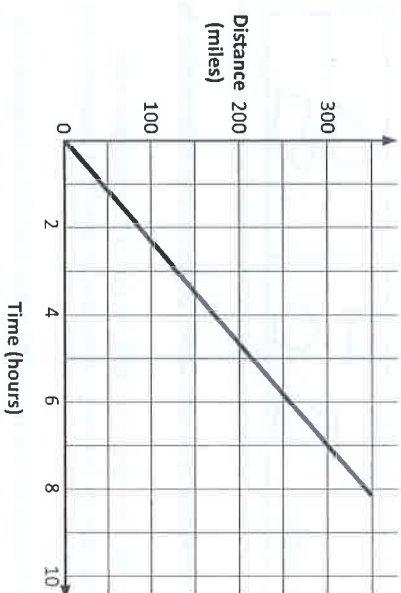
b Collect the data.

c Present your findings in a bar chart.

Statistics – time graphs

A time graph is a way of showing how something changes as time passes. This time graph shows how far a car has driven on a long journey.

Car Journey



Time graphs can be used to ask and answer questions. For example, if you want to know how far the car has travelled after 2 hours, find '2' on the 'Time' axis, follow its grid line upwards until you reach the graph line, then follow the grid line let to the 'Distance' axis and read off the number. This tells you that in 2 hours the car has travelled 100 miles.

It works the other way round too. If you want to know how long it took the car to drive 300 miles, find '300' on the 'Distance' axis, follow the grid line right to the graph line, then follow the grid line down to the 'Time' axis. The car took 6 hours to drive 300 miles.

- 1 Answer these questions about the time graph above:**

a How far did the car travel after 4 hours?

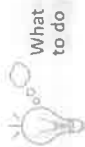
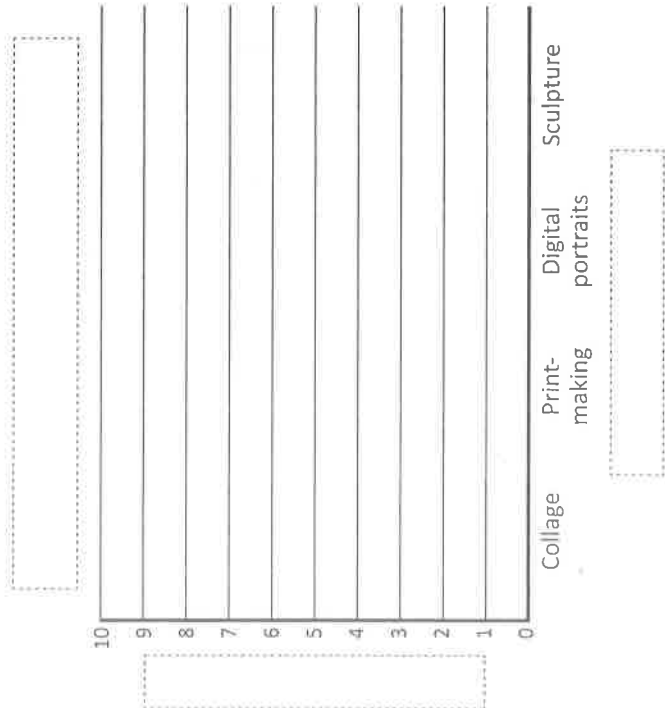
b How many hours did it take the car to drive 150 miles?

c How far did the car travel after 7 hours?

d If the car kept going at the same speed and without stopping, how far will it have travelled in 10 hours?



4B made a bar chart of their favourite art lessons for the term.



- Use the clues to complete this bar chart and label it.
- 5 kids chose collage as their favourite art activity.
 - Double the number of kids preferred print-making to sculpture.
 - 4 more kids chose digital portraits than collage.
 - 1 less kid chose print-making than digital portraits.

Telling time – five minute intervals past the hour

It takes 5 minutes for the minute hand to move from one number to the next. The time shown on this clock is 20 minutes past 6.

Remember – the minute hand is the longer one.

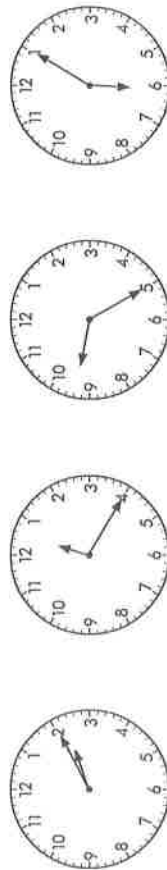


1 Write the number of minutes it takes the minute hand to move from the following:

- | | | |
|-----------|----------|-----------|
| a 8 to 12 | b 5 to 7 | c 2 to 4 |
| d 11 to 3 | e 6 to 1 | f 5 to 10 |

2 Connect each time to the matching clock face:

- | | |
|--------------------|-------------------|
| 25 minutes past 9 | 10 minutes past 2 |
| 20 minutes past 12 | 5 minutes past 6 |



3 Draw the hour and minute hands on each clock to show the correct time:

- | | | |
|------------------|-------------------|-------------------|
| a | b | c |
| 5 minutes past 6 | 20 minutes past 3 | 10 minutes past 9 |

Remember as the minute hand moves around the clock face, the hour hand gets closer to the next hour.



REMEMBER

Telling time – five minute intervals to the hour

When the minute hand has passed 30 instead of saying the number of minutes **after** the hour, you can say the number of minutes **before** the next hour.

20 to 6



1 Label the clocks:



___ minutes to ___



___ minutes to ___



___ minutes to ___



___ minutes to ___

2 Connect each clock to its time label with a line.



15 past 4



20 to 3



10 to 4



5 past 7



15 to 9

15 past 6

Telling time – to the nearest minute

Each small division on a clock represents 1 minute. As with telling the time to the nearest 5 minutes, we say 'minutes past' the last hour for times up to 30 minutes after the hour, and 'minutes' to the next hour for the 30 minutes coming up to the next hour. This clock shows '16 minutes to 6'.



1 Write the time shown on the clock face to the nearest minute.



___ minutes past ___



___ minutes to ___



___ minutes past ___







2 Draw the hands on the clock face to show the time below:



9 minutes past 12



21 minutes to 8



27 minutes past 2



14 minutes past 9



6 minutes to 12



17 minutes to 6

Telling time – digital

Digital time is always read as minutes past the hour.
This digital time could be read as 24 minutes past 8 or eight twenty four.



1 Write the times that these digital clocks are showing:



a

___ past ___



b

___ past ___



c

___ past ___



d

___ past ___

2 Draw the times on the clock faces and show the digital time below:

a half past nine



___:___

b twenty past one



___:___

c ten past four



___:___

d quarter past six



___:___

3 Complete the table to match how we say digital time to what it means:

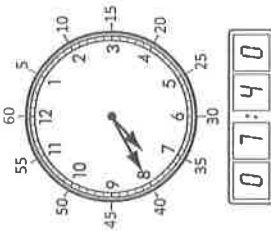
Digital time	How we say it	What it means
a 06:09	six oh nine	
b 03:42		
c 04:25		
d 07:48		



The time is eight fifty.



Telling time – digital



In digital time, when it is later than half past the hour, we can tell how long it is until the next o'clock.

This time says 7:40 which means after another 20 minutes it will be 8:00. This makes sense because there are 60 minutes in an hour. $40 + 20 = 60$
 $7:40 + 20 \text{ minutes} = 8:00$

4 How many minutes until the next o'clock?

a 6:50 + ___ minutes = 7:00 b 2:40 + ___ minutes = 3:00

c 1:35 + ___ minutes = 2:00 d 9:45 + ___ minutes = 10:00

e 4:55 + ___ minutes = 5:00 f 10:50 + ___ minutes = 11:00

5 Write the times shown on the clocks in digital form then calculate how many minutes until the next hour. The first one has been done for you.



a

04:42

18 minutes to 5



b

___:___

___ minutes to ___



c

___:___

___ minutes to ___



d

___:___

___ minutes to ___

6 Read how many minutes there are until the next hour. Show this time on the clock face and in digital form.



a

___:___

16 minutes to 3



b

___:___

20 minutes to 8



c

___:___

25 minutes to 10



d

___:___

17 minutes to 8

Measuring time – 24-hour time

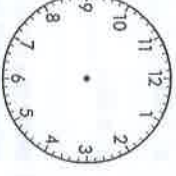
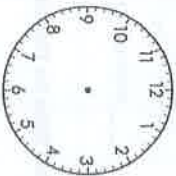
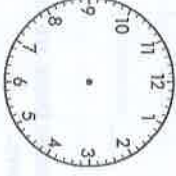
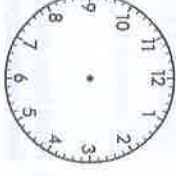


Time can be measured using 12-hour time, using am/pm, or 24-hour time.

3:00 pm = 15:00

When writing digital time, a zero is sometimes placed before single-digit hours, so, for example, both 07:00 and 7:00 are correct. When showing 24-hour time a colon (:) is usually put between the hours and minutes (eg 14:00), though you may sometimes see it without (eg 1400).

1 Complete the table with the correct analogue, digital and 24-hour times.

			
08:35	1:00 pm	9:30 pm	18:15
			
2:22 pm	1:18 am	20:00	21:04

Measuring time – 24-hour time

2 Convert these 24-hour times to digital times:

a 04:00 = 4:00 am

b 15:00 =

c 13:30 =

d 16:05 =

e 09:20 =

f 08:25 =

3 Convert these digital times into 24-hour time:

a 9 am =

b 10 pm =

c 7:30 am =

d 2:15 pm =

e 5:35 am =

f 7:25 pm =

4 It is 17:00 and your favourite TV show is due to start in half an hour. Show the starting time in digital form:

DVD recorders use 24-hour time to record programs.

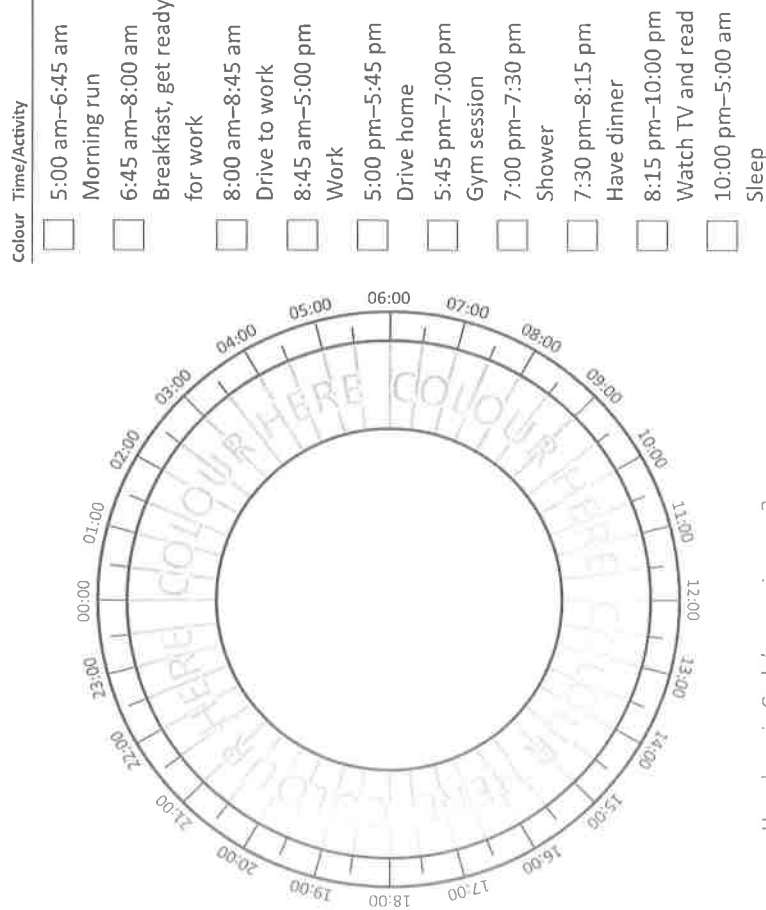
5 Minh wants to record some programs on her DVD. Enter the start and finish times of each program in 24-hour time. How long is each show?

Channel 4	
9:00 am	Science Show
10:00 am	Behind the News
11:00 am	Weather Report
12:00 pm	Midday News
1:30 pm	My Name is Greg
2:30 pm	Movie: Solaris
4:00 pm	4 pm News
5:00 pm	Smartline
6:00 pm	Current Affairs
8:00 pm	Movie: Chinatown
9:45 pm	Late News

Program	Start	Finish	Length
Science Show	09:00	10:00	1 hour
Behind the News			
Movie: Solaris			
4 pm News			
Smartline			
Movie: Chinatown			

Measuring time – 24-hour time

- 6 Carla is training for a marathon. Complete the chart below to show how she spends her day. Colour each of the segments in the chart using a different colour to show the duration of each activity below.



a How long is Carla's morning run?

b How long is Carla's work day?

c How much time does Carla have between dinner and bed time?

Measuring time – am and pm

'am' is short for 'ante meridiem'. In Latin this means 'before midday'. We use 'am' for any time between midnight and midday.

'pm' is short for 'post meridiem'. In Latin this means 'after midday'. We use 'pm' for any time between midday and midnight.

Meet me at 7 pm just after dinner.

Meet me at 7 am just after breakfast.



- 1 Write am or pm in each sentence:

- a Jamie walks his dog every morning at 6:30 _____ before breakfast.
b Natalie has a snack after school at 4:00 _____.
c Just after midnight at 2:15 _____, we heard a noise outside.

- 2 Complete this table by writing the times in digital form. Circle am or pm in the last column:

a	Ten past three in the morning		am / pm
b	Quarter to nine at night		am / pm
c	Twenty to two after midnight		am / pm
d	Daytime, eighteen minutes past one		am / pm
e	Seven minutes to twelve at night		am / pm

- 3 Add two hours to each of these digital times:

- a 9:52 am _____ b 3:15 pm _____ c 11:30 am _____
d 1:42 pm _____ e 11:15 am _____ f 10:48 pm _____

- 4 How many hours from:

- a 4:00 pm to 7:00 pm _____ hours b 5:00 pm to 11:00 pm _____ hours
c 9:00 am to 1:00 pm _____ hours d 8:30 am to 6:30 pm _____ hours

Measuring time – time trials

We can use a timeline to help us with elapsed time problems.

Problem: Robbie got on the bus at 11:52 am and got off 30 minutes later.
What time was it when Robbie got off the bus?

Steps: 1. Write the start time in the first box.

2. Use the timeline to count on in minutes.

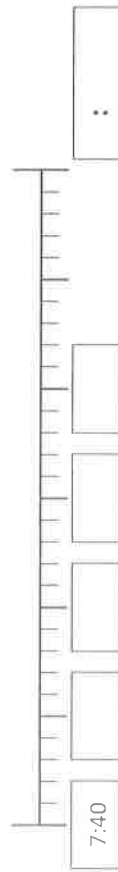
Each large marker is 10 minutes and each small marker is 2 minutes.



Answer: 12:22 pm

4. Use the timeline for each elapsed time problem:

- a Rex went for a jog at the park. He headed out at 7:40 am and jogged for 45 minutes. What time did he finish jogging?



- b Jamie watched a TV show that started at 4:56 pm and went for 54 minutes. What time did the TV show finish?



- c Naomi baked a chocolate cake. She put it in the oven at 1:25 pm and set the timer for 55 minutes. What time did the timer buzz?



Measuring time – calendars

30 days has September, April, June and November. All the rest have 31 days, except February alone which has 28 days clear and 29 days in each leap year.

1. Fill in the missing dates on this calendar:

January							February							March						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
31					1	2							6		1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20
17	18	19	20	21	22	23								21						
24	25	26	27	28	29	30														

April							May							June						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19
18	19	20					16	17	18	19	20			20						

2. What day of the week are the following dates:

- a 11th April _____ b 23rd June _____
c 2 weeks after 15th January _____ d 3 weeks after 6th February _____
e 1 week and 4 days after 7th May _____ f 9 days after 30th January _____

3. Connect each date with a line to the timeline below:

