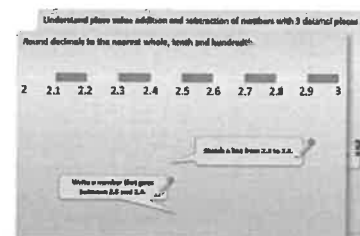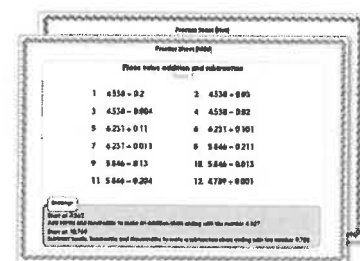# Year 4: Week 6, Day 1
The 7 times table

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.

2. Tackle the questions on the **Practice Sheet**. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.

3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**

4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation**...

Learning Reminders

Begin to know multiplication and division facts for the 7 times table.

Let's count in 7s on the counting stick.

| 0 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 77 | 84 |

How many 7s are in 28?

How many 7s are in 56?

How many 7s are in 77?

Learning Reminders

Begin to know multiplication and division facts for the 7 times 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
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

What pattern do the multiples of 7 make on the 1-100 grid?

What happens when 7 is added to any number on the grid...?

The pattern for the 7 times tables isn't as helpful as for other tables, but our activities will help us remember them!

Practice Sheet Mild
7 times table

Use this grid to complete the calculations using the 7 times table.

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

$7 \times 4 = \boxed{}$

$42 = 7 \times \boxed{}$

$\boxed{} \times 7 = 21$

$63 \div 7 = \boxed{}$

$8 \times 7 = \boxed{}$

$7 \div \boxed{} = 7$

$\boxed{} \div 7 = 6$

$7 \times \boxed{} = 14$

$\boxed{} = 7 \times 11$

$\boxed{} \div 7 = 10$

$\boxed{} \times 7 = 49$

$84 = \boxed{} \times 7$

Practice Sheet Hot
7 times table

Write the multiples of 7 on this grid.
Use it to complete the calculations using the 7 times table.

1	2	3	4	5	6		8	9	10	11	12
2	4	6	8	10	12		16	18	20	22	24
3	6	9	12	15	18		24	27	30	33	36
4	8	12	16	20	24		32	36	40	44	48
5	10	15	20	25	30		40	45	50	55	60
6	12	18	24	30	36		48	54	60	66	72
8	16	24	32	40	48		64	72	80	88	96
9	18	27	36	45	54		72	81	90	99	108
10	20	30	40	50	60		80	90	100	110	120
11	22	33	44	55	66		88	99	110	121	132
12	24	36	48	60	72		96	108	120	132	144

$7 \times 4 = \boxed{}$

$42 = 7 \times \boxed{}$

$\boxed{} \div 7 = 8$

$7 \times 12 = \boxed{}$

$\boxed{} \times 7 = 77$

$7 \times \boxed{} = 21$

$9 = \boxed{} \div 7$

$\boxed{} \times 7 = 49$

$\boxed{} \div 7 = 1$

Challenge

Shade the multiples of 7 on the right hand grid. Look at the pattern and describe it.

This grid has 8 columns. If the grid had 7 columns, what would the pattern be?

If the grid had 9 columns, what would the pattern be?

What if the grid had 6 columns?

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

Practice Sheet Answers

7 times table (mild)

$7 \times 4 = 28$

$42 = 7 \times 6$

$3 \times 7 = 21$

$63 \div 7 = 9$

$8 \times 7 = 56$

$7 \div 1 = 7$

$42 \div 7 = 6$

$7 \times 2 = 14$

$77 = 7 \times 11$

$70 \div 7 = 10$

$7 \times 7 = 49$

$84 = 12 \times 7$

7 times table (hot)

$7 \times 4 = 28$

$42 = 7 \times 6$

$56 \div 7 = 8$

$7 \times 12 = 84$

$11 \times 7 = 77$

$7 \times 3 = 21$

$9 = 63 \div 7$

$7 \times 7 = 49$

$7 \div 7 = 1$

Challenge

The pattern moves back by 1 on each row.
If it had 7 columns it would be straight down.
If it had 9 columns it would drop back by 2 on each row.
If it had 6 columns it would move forward by 1 on each row.

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

A Bit Stuck?
Sevens success
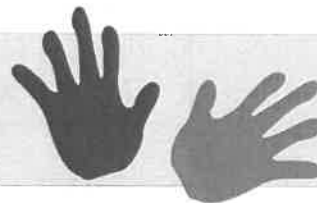
What to do:

Shuffle the set of 1 to 12 cards, then take one.

Count that number of 7s down the middle column of the table (on next page), e.g. If you have the number 4 card, count four 7s: 7, 14, 21, 28.

Complete the multiplication and division calculations - that one is done for you:

$\boxed{4} \times 7 = 28, 28 \div 7 = \boxed{4}$

Keep going until you have completed the table!

Turn the table over, shuffle the cards again, then take one.
Multiply the number on it by 7. Can you remember the answer? If not, count on in 7s, then check you answer by looking at the table.

Repeat until you have used all the cards.

Do you know a more facts for the 7 times table now, than you did before this activity?

☐ x 7 =	7	÷ 7 = ☐
☐ x 7 =	14	÷ 7 = ☐
☐ x 7 =	21	÷ 7 = ☐
4 x 7 =	28	÷ 7 = 4
☐ x 7 =	35	÷ 7 = ☐
☐ x 7 =	42	÷ 7 = ☐
☐ x 7 =	49	÷ 7 = ☐
☐ x 7 =	56	÷ 7 = ☐
☐ x 7 =	63	÷ 7 = ☐
☐ x 7 =	70	÷ 7 = ☐
☐ x 7 =	77	÷ 7 = ☐
☐ x 7 =	84	÷ 7 = ☐

5	10
4	9
3	8
2	7
1	6

15	14	13	12	11
20	19	18	17	16

Investigation
Secret Sevens

The 7 times table has been written out here, using a code where each letter a to h stands for a digit.

The table has not been written in order, so 1 x 7 is NOT first.

Your challenge is to crack the code and discover what digit each letter represents!

$$a \times 7 = eg$$

$$b \times 7 = 7$$

$$c \times 7 = dh$$

$$d \times 7 = ae$$

$$7 \times e = ba$$

$$f \times 7 = hf$$

$$7 \times g = fd$$

$$h \times 7 = eb$$

$$7 \times 7 = ac$$

Extra Challenge
Invent your own letter puzzle similar to this one for the 8x table

Year 4: Week 6, Day 2
Factors

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.

2. Tackle the questions on the **Practice Sheet**. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.
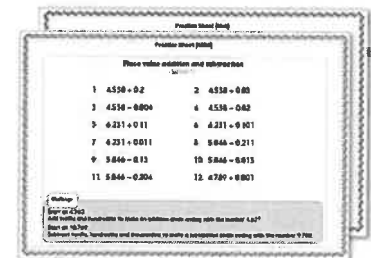
3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**

4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation**...

Learning Reminders

Find factors of numbers up to 40.

How many factors does 21 have?

Draw the different possible arrays for 21 counters.

3 x 7
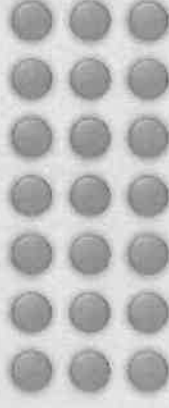
1 x 21

21 has just 4 factors in 2 pairs, 1 and 21 and 3 and 7.

Learning Reminders

Find factors of numbers up to 40.

Now try 16.

1 x 16

4 x 4

4 is paired with itself so we don't have to count it twice.

2 x 8

16 has 5 factors, 1, 2, 4, 8 and 16.

Practice Sheet Mild
Matching factors

Match each number to its factors.
Add the number itself to the list of factors,
e.g. 15 has 15 as a factor, so 15 must be added to 1, 3 and 5.

Section A

15	3, 7, 1
6	2, 3, 1
21	3, 1, 5
10	2, 4, 3, 6, 12, 8, 1
12	1, 5, 2
24	2, 3, 4, 1, 6

Section B

22	2, 1, 6, 9, 3
31	3, 1
9	2, 11, 1
36	5, 1, 2, 3, 15, 6, 10
18	1
30	1, 4, 2, 18, 9, 3, 6, 12

Challenge

Most of the numbers you investigated had an even number of factors, but some had an odd number of factors.
I wonder what makes these numbers special?

Can you find any other numbers with an odd number of factors?

Practice Sheet Hot
Matching factors

Match each number to its factors.
Add the number itself to the list of factors,
e.g. 15 has 15 as a factor, so 15 must be added to 1, 3 and 5.

Section C

34	1, 4, 2
4	2, 17, 1
16	3, 2, 4, 8, 12, 6, 16, 1, 24
39	4, 2, 1, 5, 10, 8, 20
48	3, 1, 13
40	8, 4, 1, 2
25	7, 1
49	4, 2, 16, 1, 8
32	1, 5

Challenge

Which has more factors: 99 or 100 or 101? Guess then test!

Practice Sheets Answers

Matching factors (mild)

Section A
15: 1, 3, 5, 15
6: 1, 2, 3, 6
21: 1, 3, 7, 21
10: 1, 2, 5, 10
12: 1, 2, 3, 4, 6, 12
24: 1, 2, 3, 4, 6, 8, 12, 24

Section B
22: 1, 2, 11, 22
31: 1, 31
9: 1, 3, 9
36: 1, 2, 3, 4, 6, 9, 12, 18, 36
18: 1, 2, 3, 6, 9, 18
30: 1, 2, 3, 5, 6, 10, 15, 30

Challenge

9 and 36 should be ringed. These are both square numbers.
For another number with an odd number of factors, accept any square number, i.e. 1, 4, 16, 25, 49, 64, 81, 100 ...

Matching factors (hot)

Section C
34: 1, 2, 17, 34
4: 1, 2, 4
16: 1, 2, 4, 8, 16
39: 1, 3, 13, 39
48: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
40: 1, 2, 5, 8, 10, 20, 40
25: 1, 5, 25
49: 1, 7, 49
32: 1, 2, 4, 8, 16, 32

Challenge
100 has more factors than 99 or 101.

Work in pairs

Things you will need:
- 50 counters
- A pencil

What to do:

14, 16, 24, 27, 29, 32, 36

- Choose a number.
  Take this number of counters.
  Arrange the counters into an array (rectangle).
  Write the matching multiplication.

- Now rearrange them into as many different arrays as you can.
  Write the matching multiplication each time.

- Score one point for each multiplication you write.

- Choose another number and do the same.
  Try to score as many points as you can.

- Carry on choosing different numbers and making as many arrays as you can.
  Write the matching multiplication each time.

- Which numbers do you think will score lots of points?
  Which number do you think won't score many points?

14
1 x 14
2 x 7

S-t-r-e-t-c-h:
Find the number between 40 and 50 with the greatest number of factors, i.e. the greatest number of possible arrays.

Learning outcomes:
- I can make different arrays for a given number and write the matching multiplications.
- I understand that multiplication works both ways, e.g. 4 x 6 = 6 x 4.
- I am beginning to identify pairs of factors.

Investigation
Factor facts

1
18
2   **18**   9
3   6
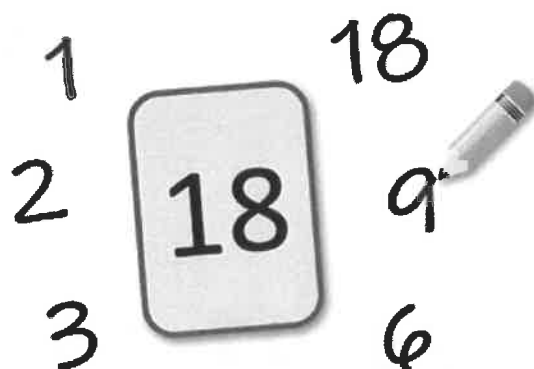
Explore the factors of numbers up to 40.

Find
a) which number has most factors
b) which numbers have an odd number of factors
c) which numbers only have two factors, themselves and 1.

If you had to guess, which number between 40 and 100 do you think.....

- might have most factors?
  Why?

- could have an odd number of factors?
  Why?

- is the largest number less than 100 with just 2 factors?
  Why?

Now investigate to check.....

Year 4: Week 6, Day 3
Co-ordinates

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.
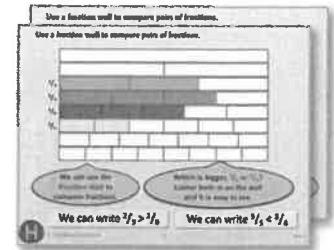
    OR start by carefully reading through the **Learning Reminders**.

2. Tackle the questions on the **Practice Sheet**. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.

3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**

4. Have I mastered the topic? A few questions to **Check** your understanding. Fold the page to hide the answers!

Learning Reminders

**Read and plot co-ordinates in the first quadrant; Complete polygons by giving missing points.**

This is called a co-ordinate grid – we can use it to plot points, like a map.

This line is the x-axis. It goes across the grid, marking the horizontal position.

x-axis

This line is the y-axis. It goes up the grid, marking the vertical position.

y-axis

The origin is the point where the x and y-axes cross.

Learning Reminders

Read and plot co-ordinates in the first quadrant; Complete polygons by giving missing points.

This is the point (2, 5) – we always give the x position first, then a comma, then the y position.

It is 2 grid squares across from the origin and 5 squares up.

What is this point?

(6, 1) – can you see why?

These 2 points are 2 vertices of a square. Where might the other 2 vertices be?

y-axis

x-axis

Learning Reminders

Read and plot co-ordinates in the first quadrant; Complete polygons by giving missing points.

Here's one solution, can you think of another one?

These 2 points are 2 vertices of a square. Where might the other 2 vertices be?

y-axis ←

x-axis →

(2, 5)   (6, 5)

(2, 1)   (6, 1)

Learning Reminders

Read and plot co-ordinates in the first quadrant; Complete polygons by giving missing points.

Did you think of this orientation...?!

These 2 points are 2 vertices of a square. Where might the other 2 vertices be?

(2, 5)
(6, 5)
(2, 1)
(6, 1)

y-axis

x-axis →

0 1 2 3 4 5 6 7 8 9 10

4 5 6 7 8 9 10

Practice Sheet Mild
Plotting shapes

Plot the points on the grid, join them and write the name of this shape.
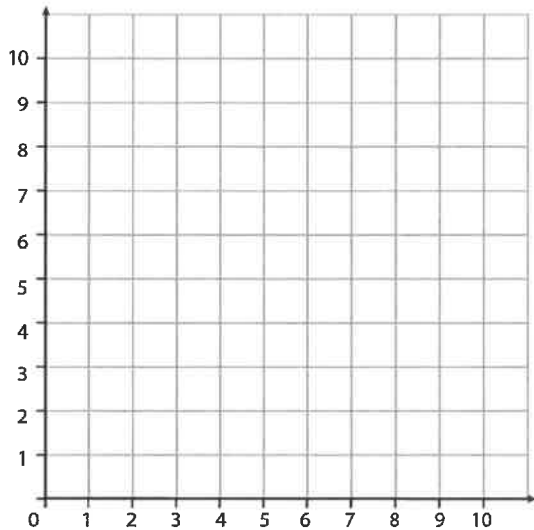
1.   A (3,7) B (3,3) C (7,3) D (7,7)
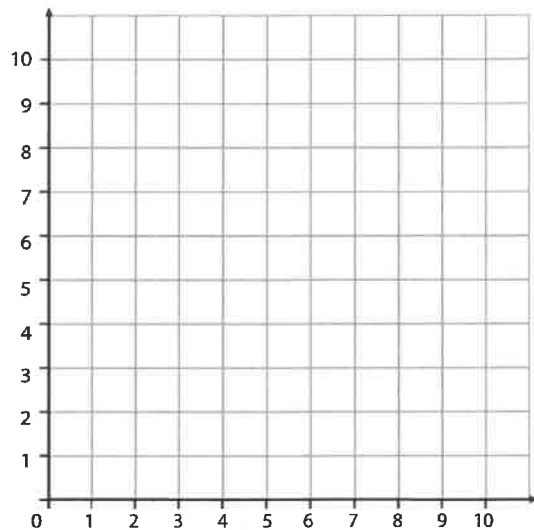
2.   A (9,1) B (9,8) C (5,8) D (5,1)
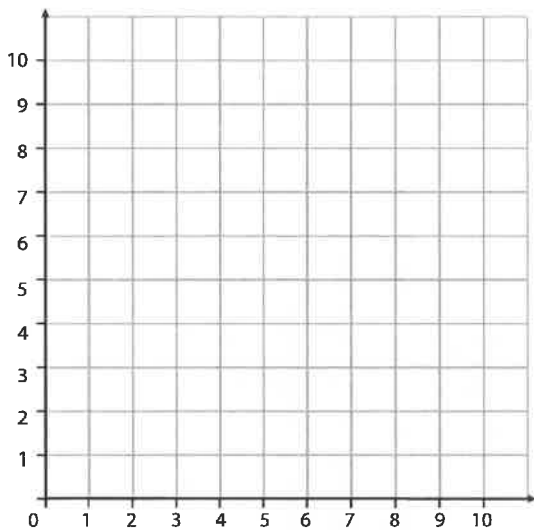
3.   A (2,1) B (8,1) C (2,7)
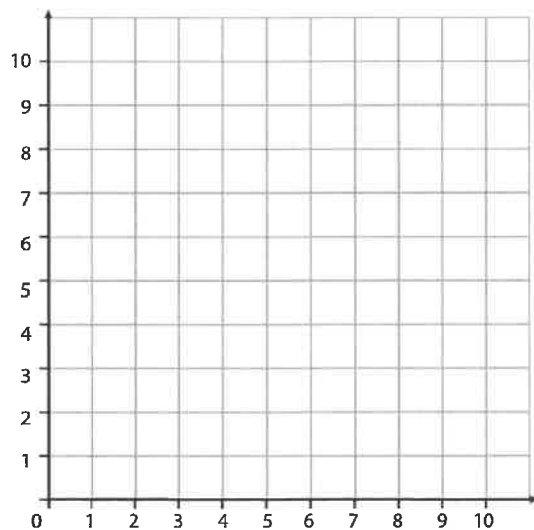
4.   A (3,0) B (5,9) C (7,0)

Challenge

Three corners of a square are located at (3,0), (5,8) and (0,5). Where is the 4th corner?

Practice Sheet Hot
Plotting shapes

Plot the points on the grid, join them and find the missing point to make the shape.
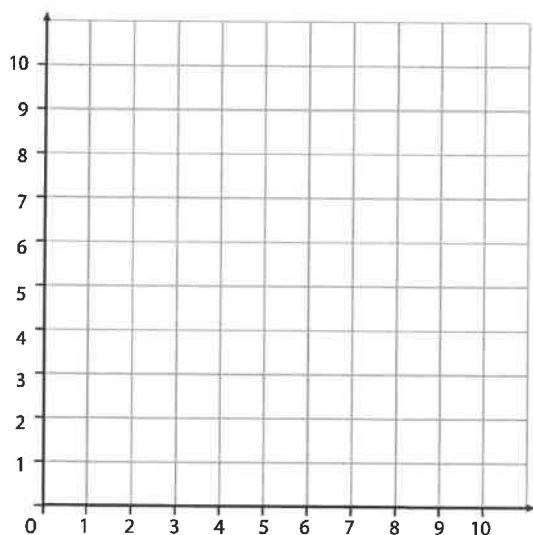
1.   Square
      A (3,8)   B (3,2)   C (6,5)
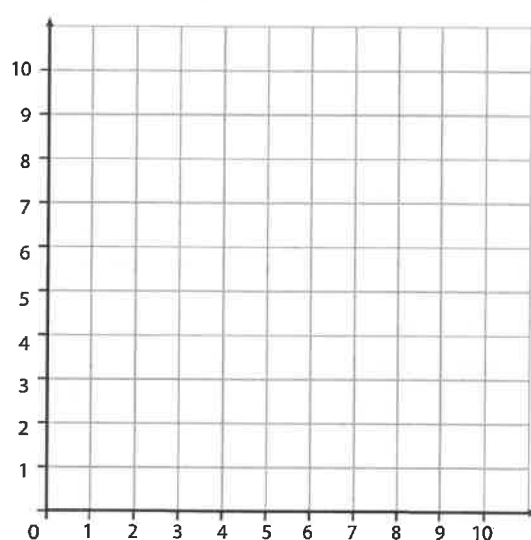
2.   Rectangle
      A (9,1)   B (9,8)   C (5,8)
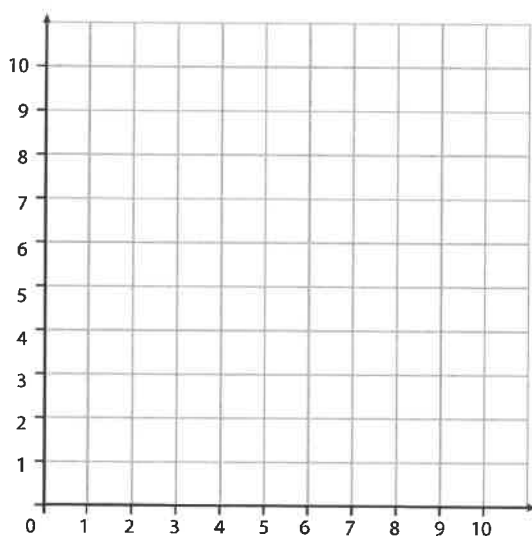
3.   Right-angled triangle
      A (2,1)   B (8,1)
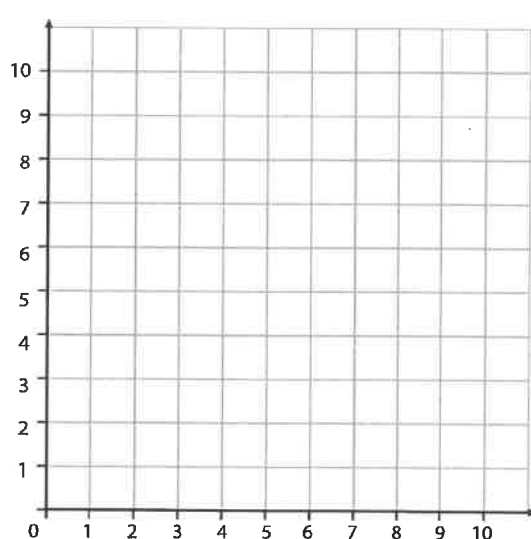
4.   Isosceles triangle
      A (0,2)   B (0,8)

Challenge

Draw your own set of 0 to 10 axes. Plot co-ordinates (4,4) and (0,4). Find the missing pairs of co-ordinates to form the vertices of 3 different squares.

Practice Sheet Answers

Plotting shapes (mild)

1. Square
2. Rectangle
3. Right angled triangle
4. Isoceles triangle

Challenge

The 4th corner is at (3, 8).

Plotting shapes (hot)

1. (0, 5)
2. (5, 1)
3. Lots of possible answers including co-ordinates starting with 2, e.g. (2, 2) up to (2, 10) or starting 8, e.g. (8, 2) up to (8,10).
4. Isoceles triangle missing co-ordinates could be (1, 5), (2, 5), (3, 5), etc.

Challenge

Missing pairs of co-ordinates to form a square are:
(0, 0) and (4, 0); (0, 8) and (4, 8); and (2, 2) and (2, 6)

Things you will need:
- 0 to 9 cards
- Co-ordinate grid

What to do:

- Play with a partner.

- Each person has a co-ordinate grid.

- Shuffle the pack of 0–9 cards.

- Take 2 cards to make a pair of co-ordinates.

- Plot this point on your grid.

  - These hints help you to remember the order to plot co-ordinates (x co-ordinate first, then y co-ordinate):

    | Walk before you fly | Along the corridor then up the stairs |

- Have you both drawn the point in the same place?

- If so, you both score 10 points. If not, work out where it should be. Remember to 'go across' before you 'go up'!

- Put the cards back and repeat four more times (remember the order you plot the points).

- Join your points *without crossing any of your lines*.
  What shape have you formed?

- Use a different colour pencil to join your points *in the order you plotted them*.
  Have you formed any shapes? What are they?

- Repeat with a new co-ordinate grid.

5	10
4	9
3	8
2	7
1	6
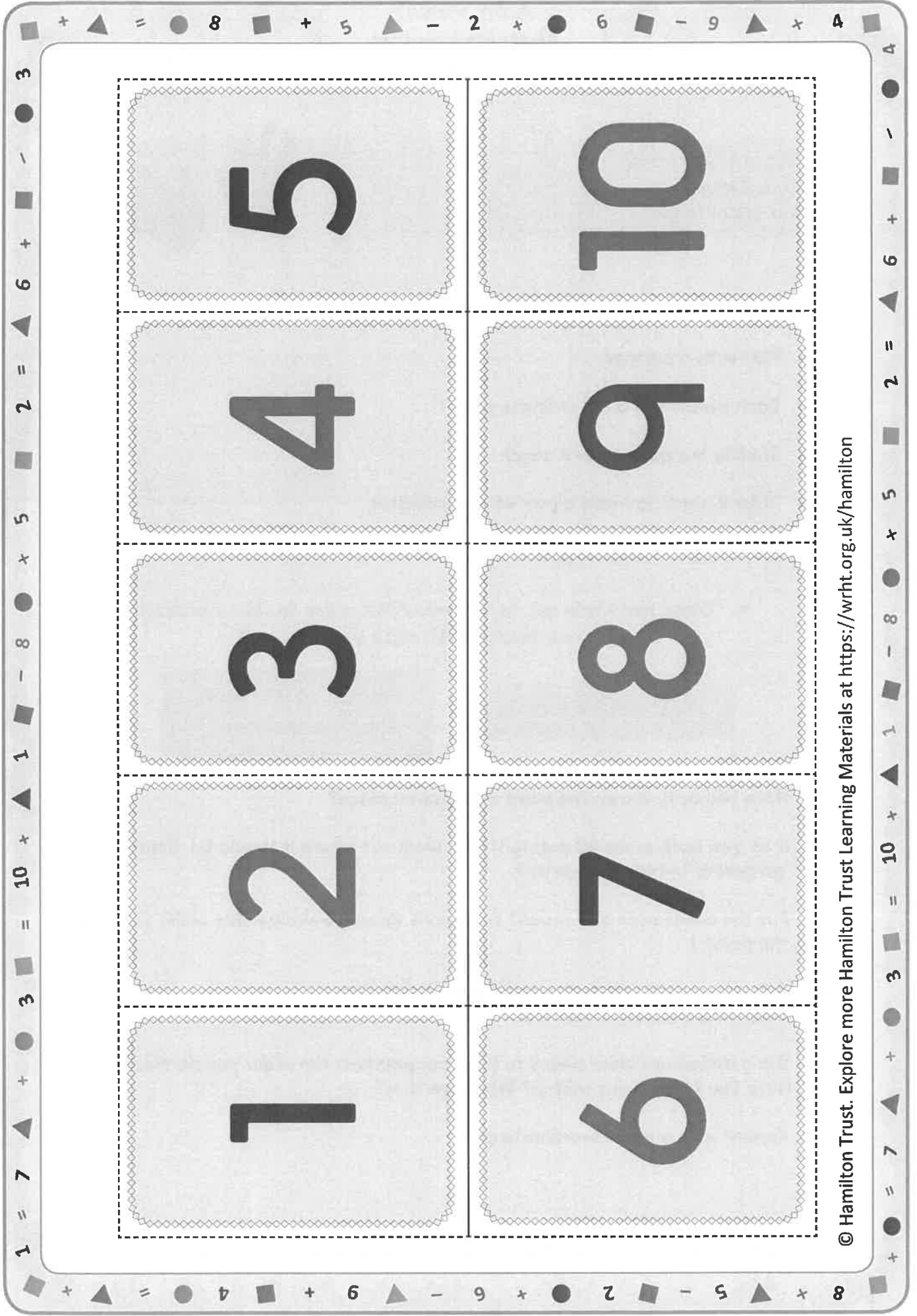
A Bit Stuck?
Matching points
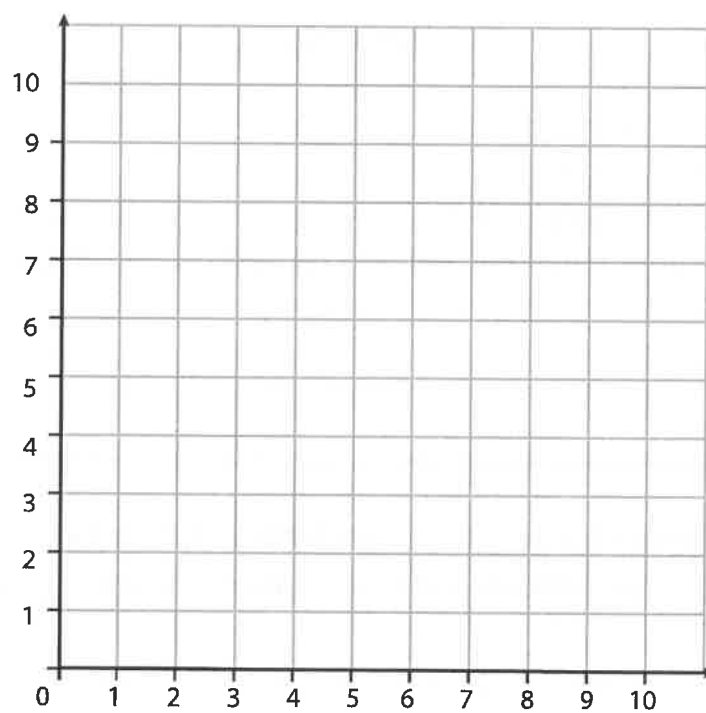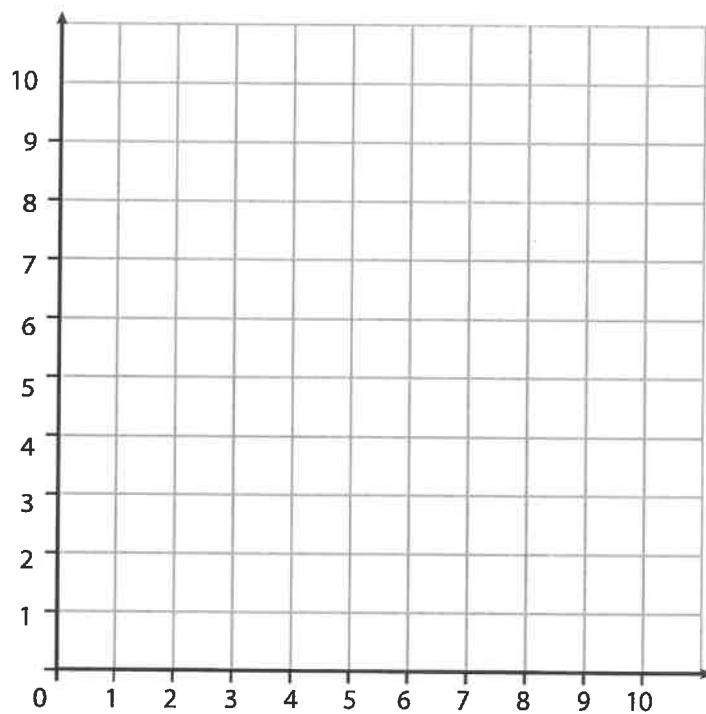
Check your understanding
Questions

Draw a 6 by 6 co-ordinate grid; label the x and y axes.
Mark these co-ordinates:

A (1, 1) B (1, 4) C (4, 1)

Join these and name the shape created.

Add another co-ordinate, so that if you join all four vertices you create a 4-sided shape that is not a square.

Sam says that if she draws a square on a co-ordinate grid, then two of its corners will always have the same 'x' co-ordinate and two will have the same 'y' co-ordinate.
Is she correct?

Fold here to hide answers

Check your understanding
Answers

Draw a 6 by 6 grid; label the x and y axes.
Mark these co-ordinates: A (1, 1) B (1, 4) C (4, 1).
Join these and name the shape created. Right-angled isosceles triangle.
Add another co-ordinate so that if you join all four vertices you create a 4-sided shape that is not a square. Any point other than (4, 4).
Children should be using a ruler and pencil to draw co-ordinate grids on squared paper. Co-ordinates should be clearly marked at the intersection of the vertical and horizontal lines.

Sam says that if she draws a square on a co-ordinate grid, then two of its corners will always have the same 'x' co-ordinate and two will have the same 'y' co-ordinate.
Is she correct?
This is true if the square is aligned with the horizontal and vertical axis. Since the distances between the corners are equal the x and y co-ordinates will be in pairs, e.g. A (1, 1) B (1, 4) C (4, 1) D (4, 4).
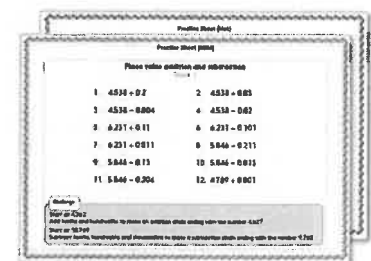
Year 4: Week 6, Day 4
Moving shapes on the co-ordinate grid

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.
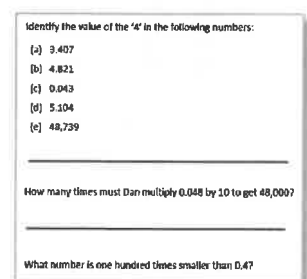

2. Tackle the questions on the **Practice Sheet**. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.

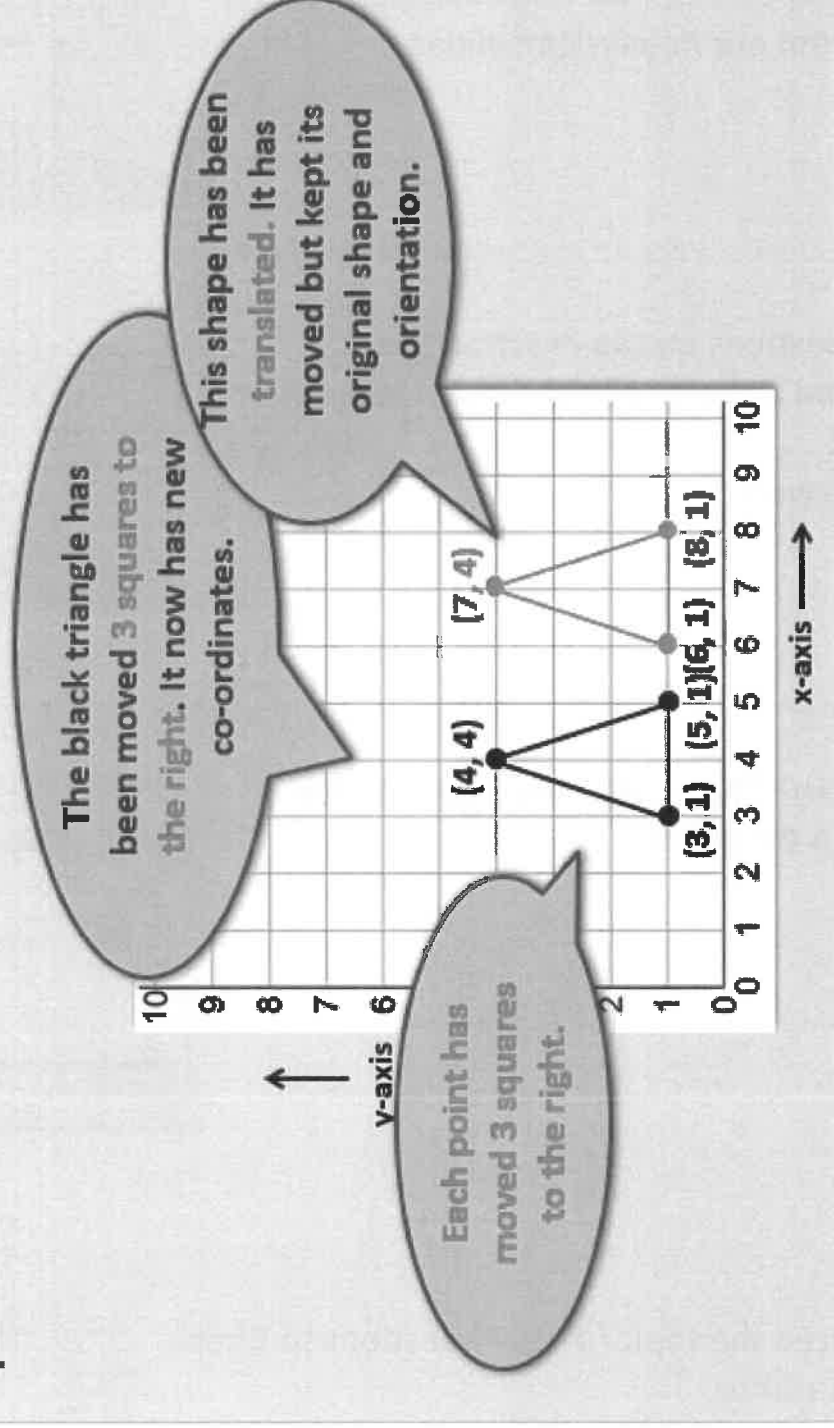3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**

4. Have I mastered the topic? A few questions to **Check your understanding**. Fold the page to hide the answers!

Learning Reminders

**Read and plot co-ordinates in the first quadrant; Translate shapes in the first quadrant.**

The black triangle has been moved 3 squares to the right. It now has new co-ordinates.

This shape has been translated. It has moved but kept its original shape and orientation.

Each point has moved 3 squares to the right.

y-axis

x-axis

(4, 4)   (7, 4)

(3, 1) (5, 1) (6, 1) (8, 1)

Learning Reminders

Read and plot co-ordinates in the first quadrant; Translate shapes in the first quadrant.

The black square moves 5 squares to the left. Here it is in red, in its new position and new co-ordinates.
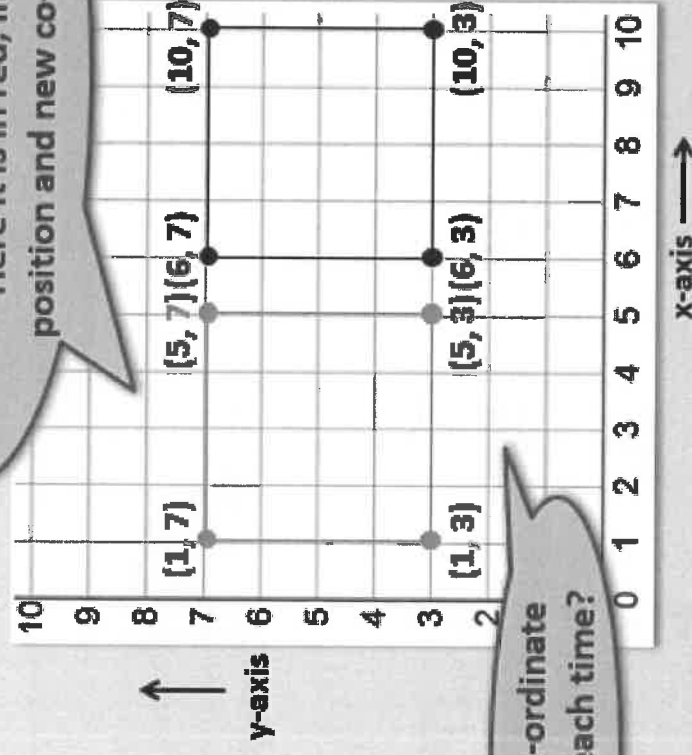
Which co-ordinate changed each time?

Learning Reminders

Read and plot co-ordinates in the first quadrant; Translate shapes in the first quadrant.

The black rectangle moves 4 squares down. Write the new co-ordinates for its new position.

Which co-ordinate changed each time?

(3, 9)   (7, 9)

(3, 7)   (7, 7)

y-axis

x-axis
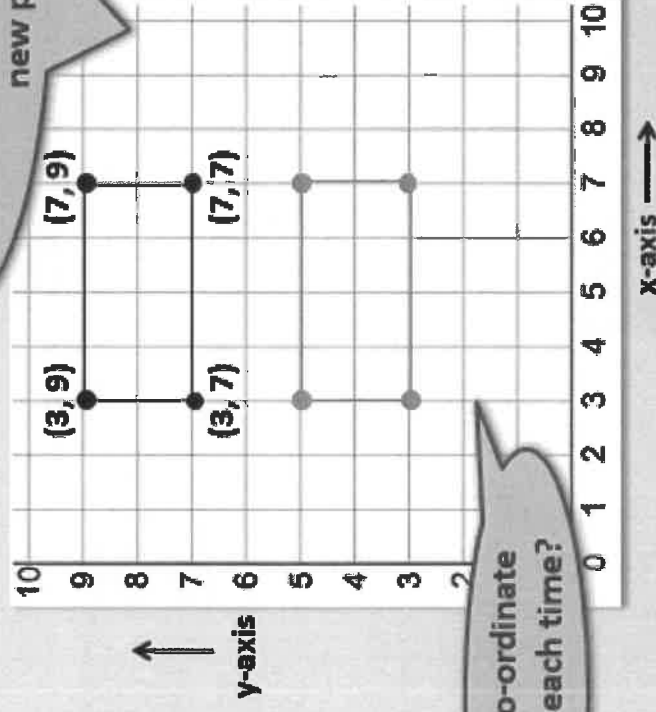
Practice Sheet Mild
Moving polygons on a grid
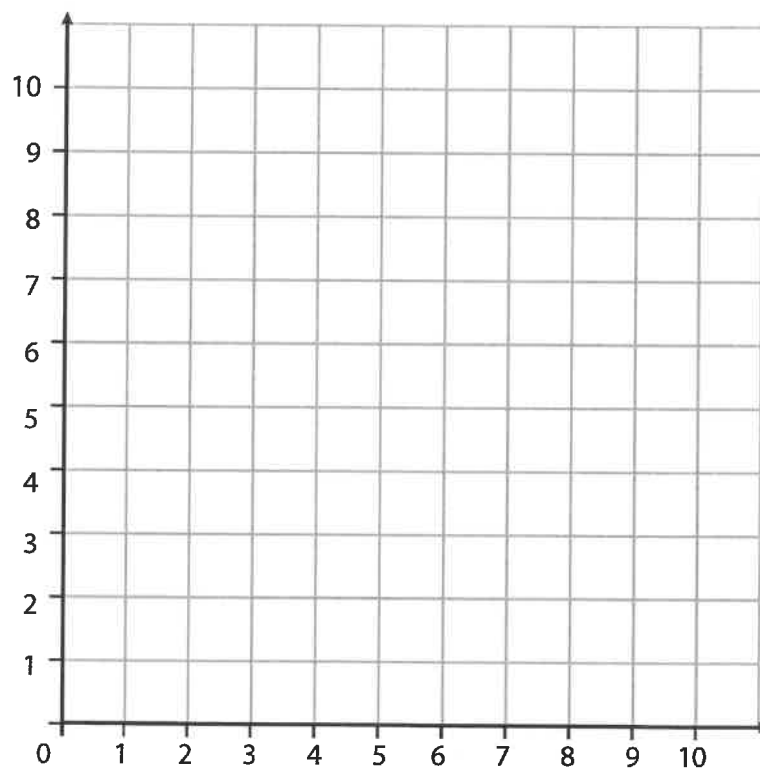
1) Plot these co-ordinates: (1,2), (4,3), (2,5)

2) Join them up, what shape have you made? _____

3) Imagine you slide this shape up three squares.

   What are the new co-ordinates of its vertices?

   _____, _____, _____

4) Draw the new shape on the grid.

5) Plot these co-ordinates: (5,8), (7,10), (5, 10)

6) They are three of the corners of a square.

   What are the co-ordinates of the other corner? _____

7) Plot this point: then join them up to draw the square.

8) Imagine you slide this shape one square down and four squares left.

   What are the new co-ordinates of its vertices?

   _____, _____, _____, _____

9) Draw the new shape on the grid.

Practice Sheet Hot
Moving polygons on a grid
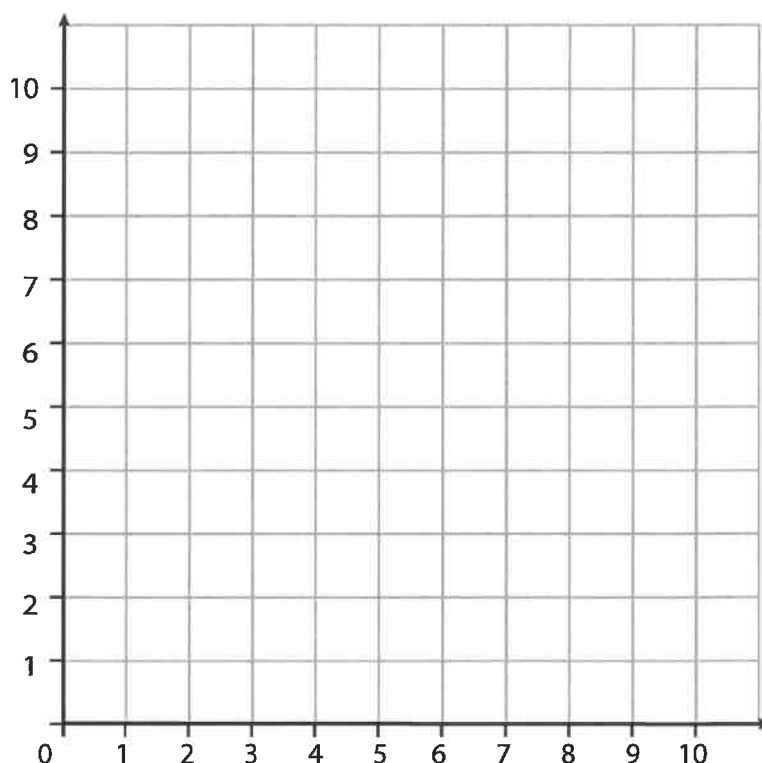
1) Plot these co-ordinates: (4,7), (7,10), (4,10)

2) They are three of the corners of a square.
   What are the co-ordinates of the other corner? _____

3) Plot these co-ordinates and join them up to draw the square.

4) Imagine you slide this shape one square 'down' and four squares left.
   What are the new co-ordinates? _____, _____, _____, _____

5) Draw the new shape on the grid.

6) Draw a shape with five straight sides on the grid.

7) What are the co-ordinates of the corners of your shape?
   _____, _____, _____, _____, _____

8) Imagine you slide your shape to a new place on the grid.
   What are the new co-ordinates? _____, _____, _____, _____, _____

9) How can you describe its movement?

10) Draw the new shape on the grid.

Challenge

A shape is translated three squares right and four squares 'up' the grid. It finishes with vertices at: (5,4), (3,9) and (3,4). Where did it start?
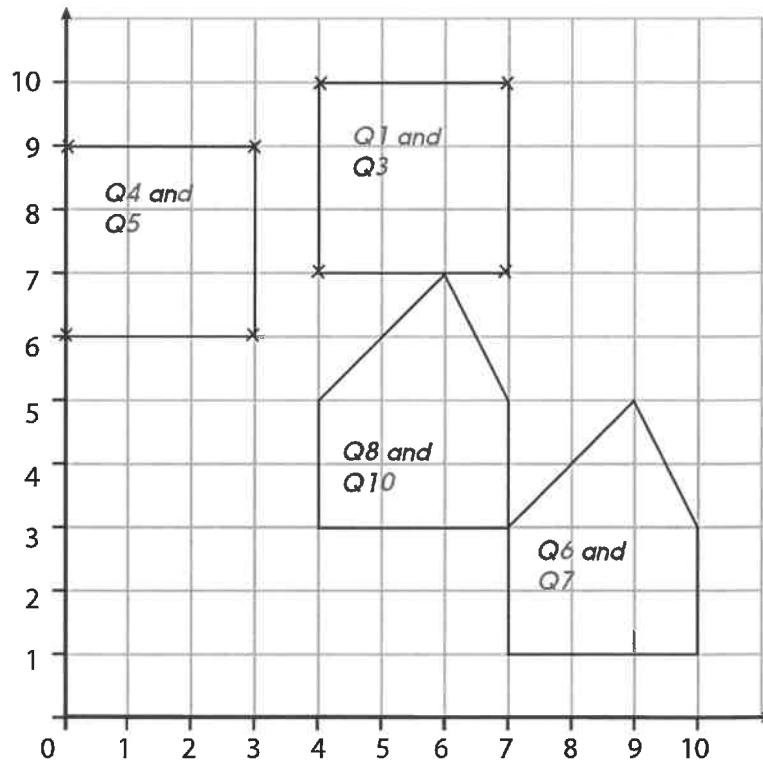
Practice Sheet Answers

Moving polygons on a grid (mild)
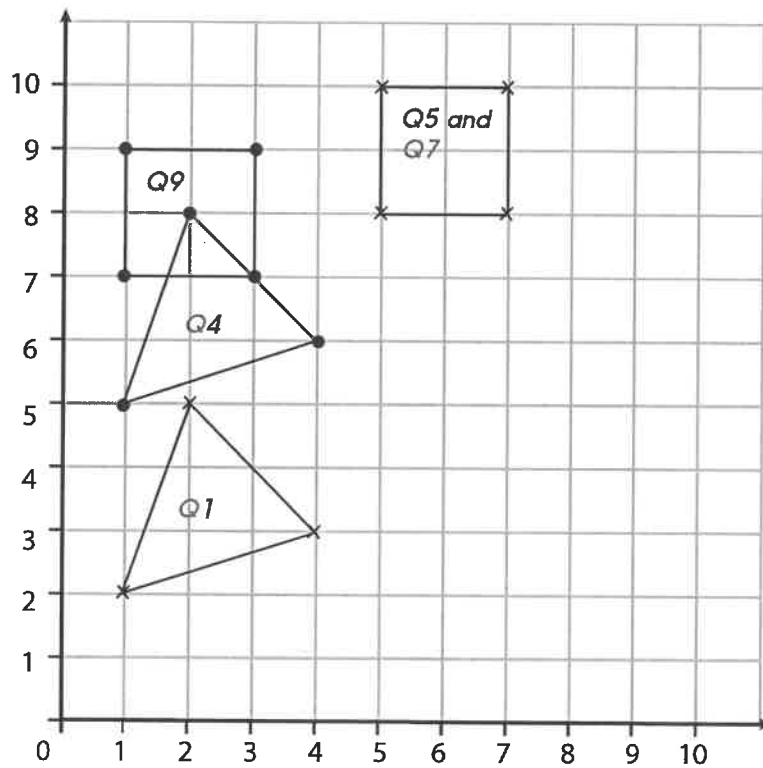
1. See grid above
2. Triangle
3. (1, 5), (4, 6) and (2, 8)
4. See grid above
5. See grid above
6. (7, 8)
7. See grid above
8. (1, 7), (1, 9), (3,7) and (3, 9)
9. See grid above

Practice Sheet Answers

Moving polygons on a grid (hot)

1. See grid above
2. (7, 7)
3. See grid above
4. (0, 9), (0, 6), (3, 6) and (3, 9)
5. See grid above
6. See grid above for an example
7. (7, 1), (7, 3), (10, 1), (9, 5) and (10, 3) are co-ordinates for shape in Q6.
8. (4, 3), (7, 3), (4, 5), (7, 5) and (6, 7)
9. Up 2 squares and left 3 squares
10. See grid above

Challenge

A shape is translated three squares right and four squares 'up' the grid. It finishes with vertices at: (5,4), (3,9) and (3,4). Where did it start?   (2, 0), (0, 5) and (0, 0)

Walk then fly!

Work in pairs

Things you will need:
- A grid
- Coloured pencils

What to do:

- Sit back to back.

- Choose a coloured pencil.
  Use it to draw a triangle on your grid.

- Tell your partner the colour pencil you chose.
  Call out the co-ordinates of the corners of
  your triangle to your partner.
  They plot the co-ordinates, then join them to
  make a triangle using the same coloured
  pencil.

- Now compare your triangles.
  Are they the same?
  If so, you both score 3 points.
  If not, you score 1 point for each matching
  point.

- Swap roles and repeat using a different
  coloured pencil.
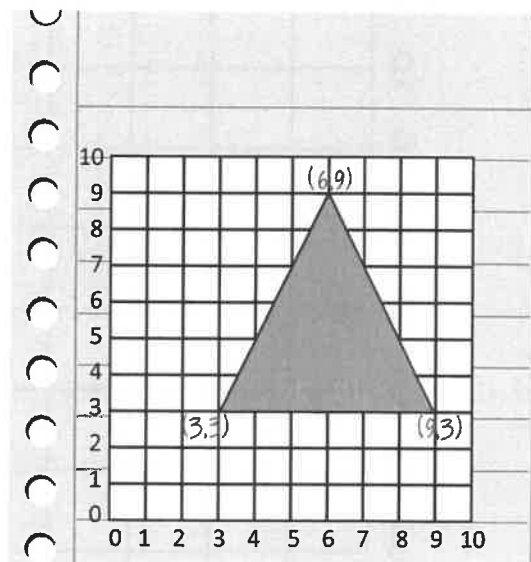
S-t-r-e-t-c-h:
Move one of your triangles up by two squares. Record the new co-ordinates.

Learning outcomes:
- I can use co-ordinates in the first quadrant.
- I am beginning to work out new co-ordinates after a translation.

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Walk then fly!
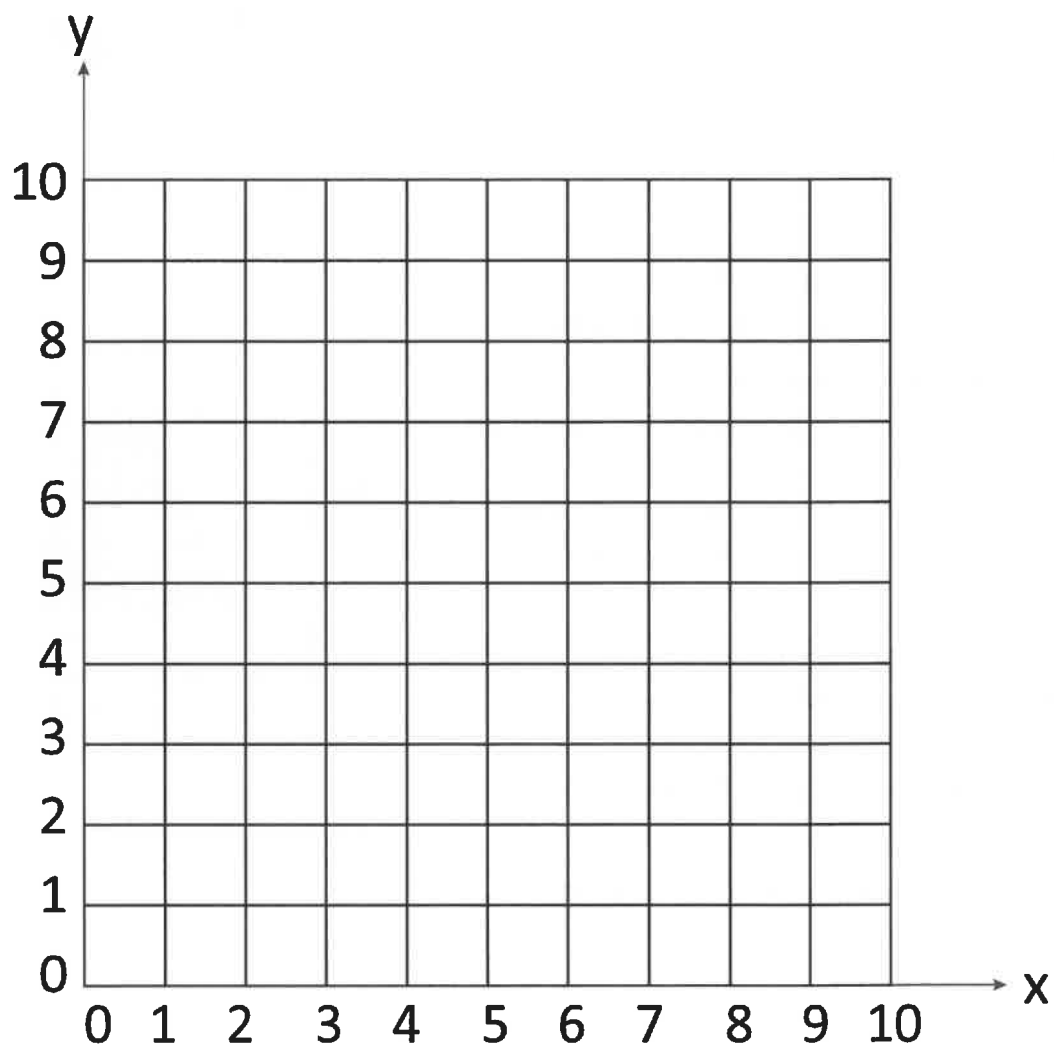
Check your understanding
Questions

Bill draws a triangle on his grid.
He moves it two squares 'down' the grid.
The new co-ordinates of its vertices are:

(2, 1) (6, 1) (3, 5)

Write the co-ordinates of the triangle before its translation.

Esme draws a triangle on her grid.
She moves it two squares to the left.
The new co-ordinates of its vertices are:

(1, 3) (5, 3) (3, 6)

Write the co-ordinates of the triangle before its translation.

Fold here to hide answers

Check your understanding
Answers

Bill draws a triangle on his grid.
He moves it two squares 'down' the grid.
The new co-ordinates of its vertices are:

(2, 1) (6, 1) (3, 5)

Write the co-ordinates of the triangle before its translation.

(2, 3) (6, 3) (3, 7)
In each case the y co-ordinates of the triangle must be 2 greater in the original. Some children may mix up direction and subtract 2. Note that the x co-ordinate is unchanged.

Esme draws a triangle on her grid.
She moves it two squares to the left.
The new co-ordinates of its vertices are:

(1, 3) (5, 3) (3, 6)

Write the co-ordinates of the triangle before its translation.
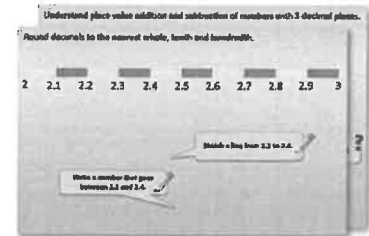
(3, 3) (7, 3) (5, 6)

In each case, the x co-ordinate is 2 greater in the original. Note that the y co-ordinate is unchanged.

Year 4: Week 6, Day 5
Draw polygons on the co-ordinate grid

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.

2. Tackle the questions on the **Practice Sheet**. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.

3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**

4. Think you've cracked it? Whizzed through the Practice Sheets Have a go at the **Investigation**...

Use co-ordinates in the first quadrant and join points to draw polygons.

What are the co-ordinates of this point?

(3, 5) – can you say why?

Why not (5, 3)?

y-axis

x-axis

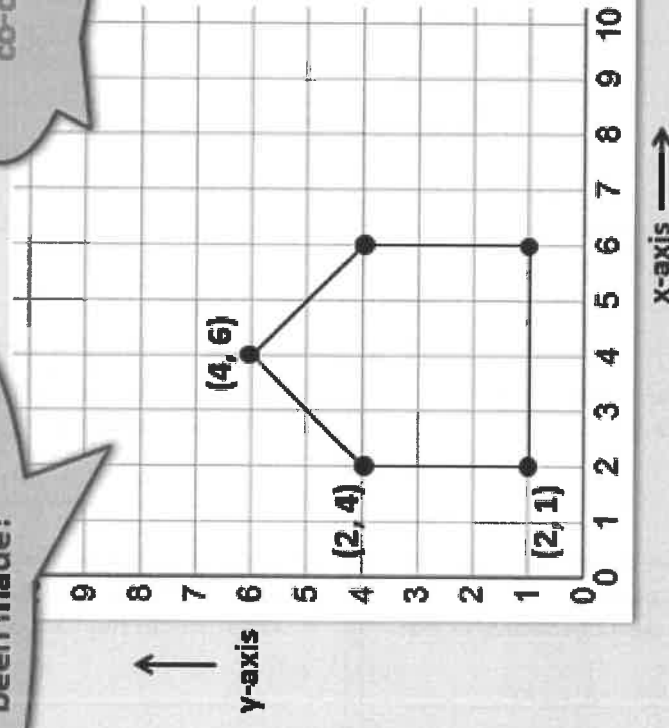0 1 2 3 4 5 6 7 8 9 10

0 1 2 3 4 5 6 7 8

Learning Reminders

Use co-ordinates in the first quadrant and join points to draw polygons.

These points are joined up, what shape has been made?

Write the missing co-ordinates of the shape.

y-axis

(4, 6)

(2, 4)

(2, 1)

x-axis

Practice Sheet Mild
Shape co-ordinates
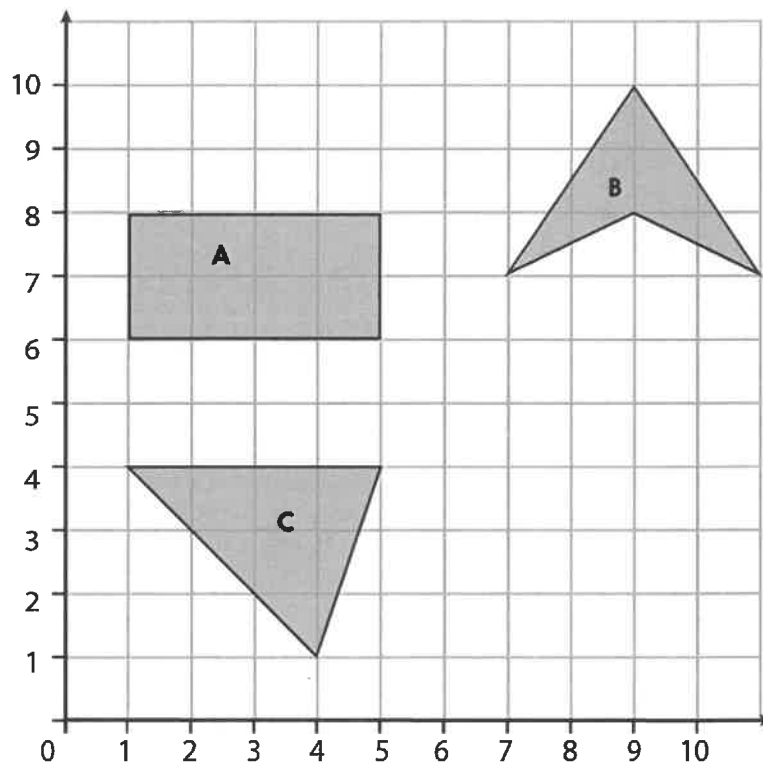
1) What are the co-ordinates of the corners of shape **A**?

_____

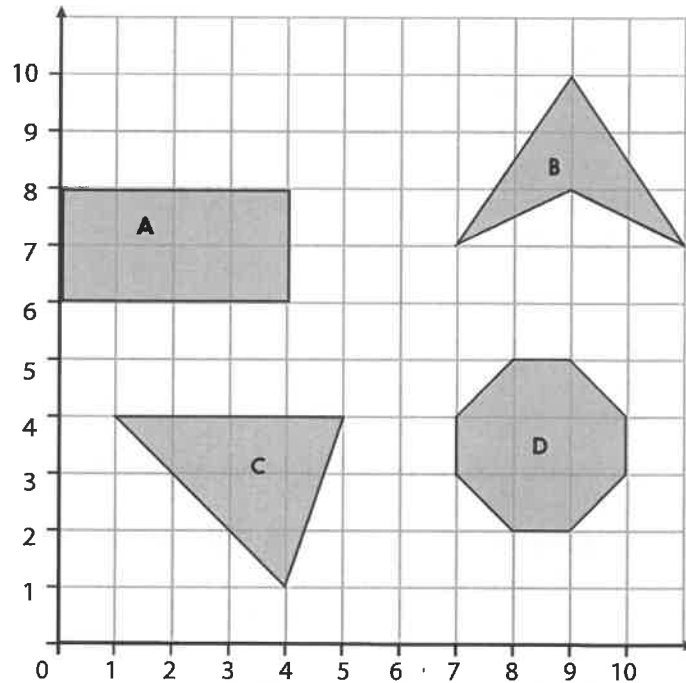2) Imagine it moved down two squares and right one square...
   What would the new co-ordinates be?

_____

3) What are the co-ordinates of the corners of shape **B**?

_____

4) Imagine it moved down four squares and left three squares...
   What would the new co-ordinates be?

_____

5) What are the co-ordinates of the corners of shape **C**?

_____

6) Imagine it moved up three squares and left one square...
   What would the new co-ordinates be?

_____

Practice Sheet Hot
Shape co-ordinates

1) What are the co-ordinates of the corners of shape A?

_____

2) Imagine it moved down two squares and right one square...
What would the new co-ordinates be?

_____

3) What are the co-ordinates of the corners of shape B?

_____

4) Imagine it moved down four squares and left three squares...
What would the new co-ordinates be?

_____

5) What are the co-ordinates of the corners of shape C?

_____

6) Imagine it moved up three squares and left one square...
What would the new co-ordinates be?

_____

7) What are the co-ordinates of the corners of shape D?

_____

8) Imagine it moved down two squares and right three squares...
What would the new co-ordinates be?

_____

Challenge

Choose one of the shapes on the sheet, move it up or down and left or right and write down the new co-ordinates. Give the new co-ordinates to your partner. Can they work out what the movement was from the original position?

Practice Sheet Answers

Shape co-ordinates (mild)

1. Shape A co-ordinates are (1, 6), (1, 8), (5, 6) and (5, 8)
2. (2, 4), (2, 6), (6, 4) and (6, 6)
3. Shape B co-ordinates are (7, 7), (9, 8), (9, 10) and (11, 7)
4. (4, 3), (6, 4), (6, 6) and (8, 3)
5. Shape C co-ordinates are (1, 4), (4, 1) and (5, 4)
6. (0, 7), (3, 4) and (4, 7)

Shape co-ordinates (hot)

1. Shape A co-ordinates are (0, 6), (0, 8), (4, 6) and (4, 8)
2. (1, 4), (1, 6), (5, 4) and (5, 6)
3. Shape B co-ordinates are (7, 7), (9, 8), (9, 10) and (11, 7)
4. (4, 3), (6, 4), (6, 6) and (8, 3)
5. Shape C co-ordinates are (1, 4), (4, 1) and (5, 4)
6. (0, 7), (3, 4) and (4, 7)
7. Shape D co-ordinates are (7, 3), (7, 4), (8, 2), (8, 5), (9, 2), (9, 5), (10, 3) and (10, 4)
8. (10, 1), (10, 2), (11, 0), (11, 3), (12, 0), (12, 3), (13, 1) and (13, 2)

A Bit Stuck?

If you'd like some extra practice using co-ordinates, play **Cali and the Co-ordinate System:**

https://www.math10.com/en/math-games/games/geometry/games-cali-coordinate-system.html

How quickly can you move Cali to the new co-ordinates 10 times?
Play again. Were you quicker this time?

All Square

- Draw a square on your grid, using the lines of the grid as the sides of the shape.

- Now label each vertex with its co-ordinates.

- Take a close look at the co-ordinates... What do you notice?

- Draw a different square; label its co-ordinates ... Do you see a pattern?

- Repeat with another square to test your theory.
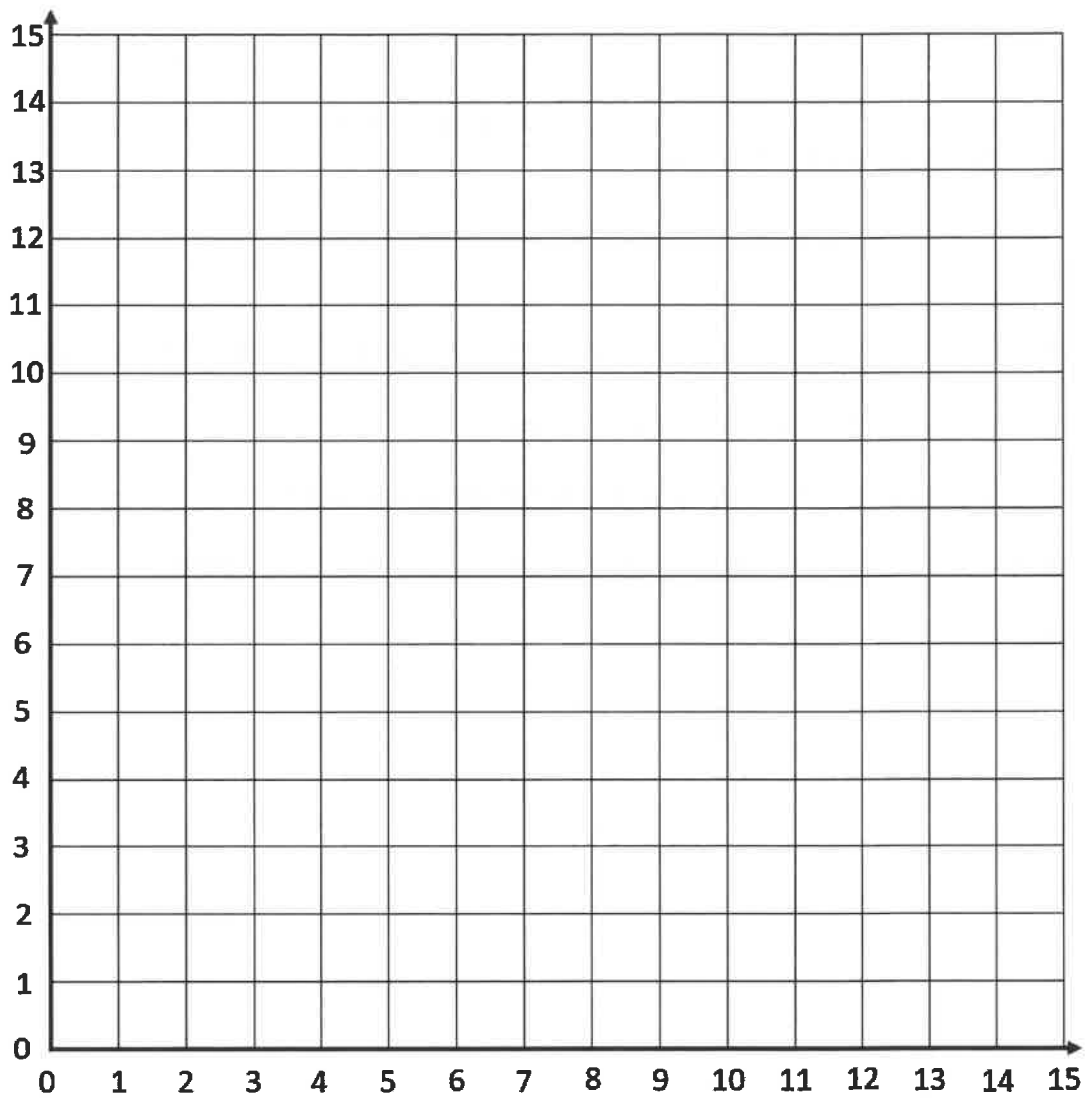
Investigation
Cycling co-ordinates

1. Write down four single-digit numbers, for example 2, 3, 6, 7.

2. Use these to produce four pairs of co-ordinates. Take the first two numbers to produce the first pair (2, 3), the second and third number to give the second pair of co-ordinates (3, 6), the third and fourth number to give the third pair of co-ordinates (6, 7) and then cycle round using the last and first numbers to give the last pair of co-ordinates (7, 2).

3. Plot the four points, then join them together. What shape have you drawn?
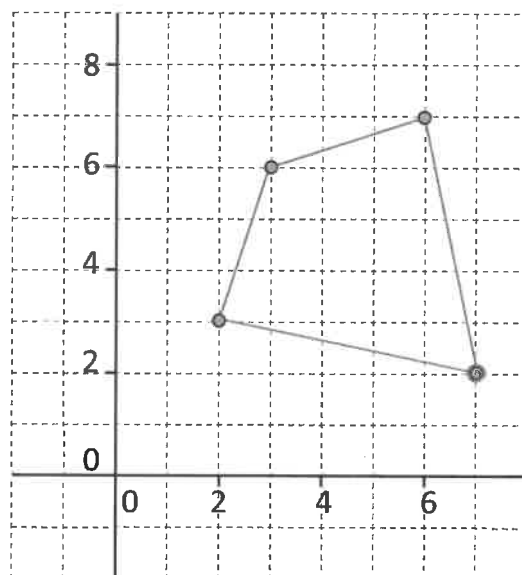
4. Now try 2, 6, 5, 1. What shape do they form this time?

5. Now try groups of your own four numbers. See what different types of quadrilateral you can produce?

Challenge

Can you write a rule for producing squares?

What to do today

1. Make predictions about a story

- Look at the *Front Cover* of Mufaro's Beautiful Daughters.
- Make a note of all the things that you can notice. Who do you think the people are? Why is there a mountain? Who is the picture of?
- What do you think might happen in this story?

2. Read the start of the story and answer questions

- Read *Mufaro Beginning*.
- Answer *Mufaro Questions 1*.
- Challenge yourself to answer *Mufaro Questions 2*.

Well done! Share your answers with a grown-up. Show them what you have read and where you found the answers. You can check your answers to Mufaro Questions 1 at the end of this document.
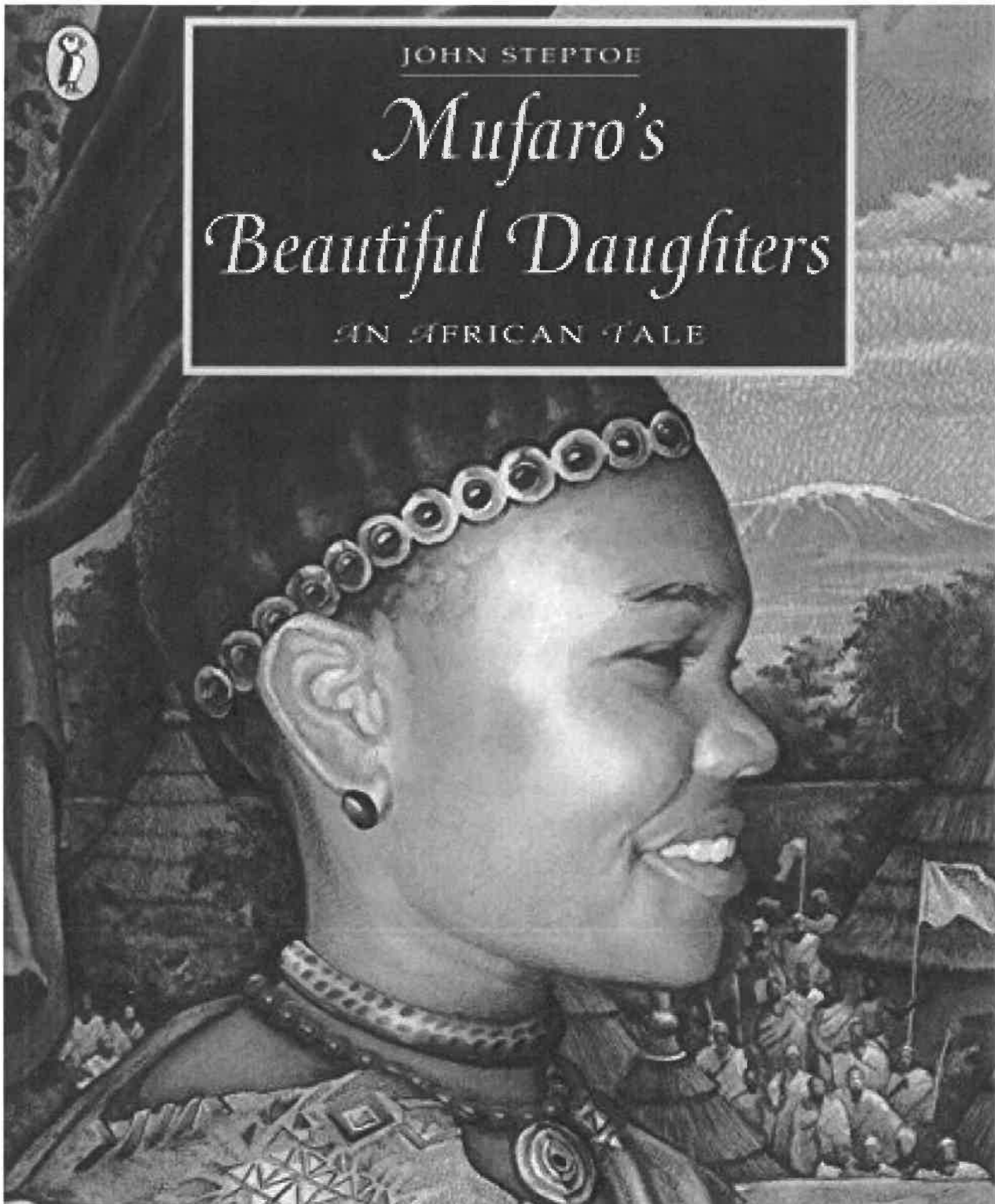
3. Character Outlines

- Use *Three Outlines*. Write notes to explain what you know and think about Mufaro, Manyara and Nyasha.

Try the Fun-Time Extra

- Use *Three Outlines* to make notes about three people that you know. What do you know about them? What do you think that you know about them?

Front Cover

JOHN STEPTOE

Mufaro's Beautiful Daughters

AN AFRICAN TALE

Mufaro Beginning

A long time ago, in a certain place in Africa, a small village lay across a river and half a day's journey from a city where a great king lived. A man named Mufaro lived in this village with his two daughters, who were called Manyara and Nyasha. Everyone agreed that Manyara and Nyasha were very beautiful.

Manyara was almost always in a bad temper. She teased her sister whenever their father's back was turned, and she had been heard to say, "Someday, Nyasha, I will be a queen, and you will be a servant in my household."

"If that should come to pass," Nyasha responded, "I will be pleased to serve you. But why do you say such things? You are clever and strong and beautiful. Why are you so unhappy?"

"Because everyone talks about how kind you are, and they praise everything you do," Manyara replied. "I'm certain that Father loves you best. But when I am a queen, everyone will know that your silly kindness is only weakness."

Nyasha was sad that Manyara felt this way, but she ignored her sister's words and went about her chores. Nyasha kept a small plot of land, on which she grew millet, sunflowers, yams, and vegetables. She always sang as she worked, and some said it was her singing that made her crops more bountiful than anyone else's.

One day, Nyasha noticed a small garden snake resting beneath a yam vine. "Good day, little Nyoka," she called to him. "You are welcome here. You will keep away any creatures who might spoil my vegetables." She bent forward, gave the little snake a loving pat on the head, and then returned to her world.

From that day on, Nyoka was always at Nyasha's side when she tended her garden. It was said that she sang all the more sweetly when he was there.

Mufaro knew nothing of how Manyara treated Nyasha. Nyasha was too considerate of her father's feelings to complain, and Manyara was always careful to behave herself when Mufaro was around.

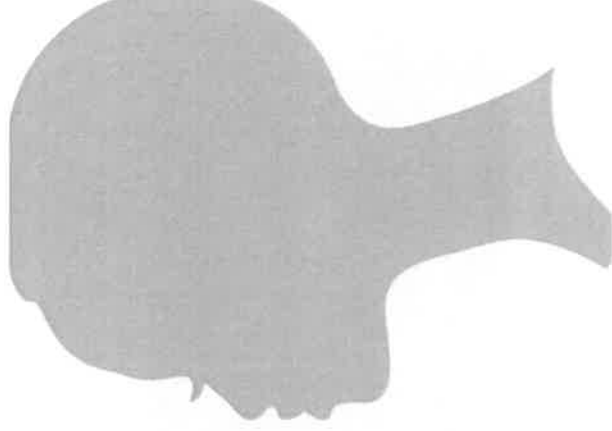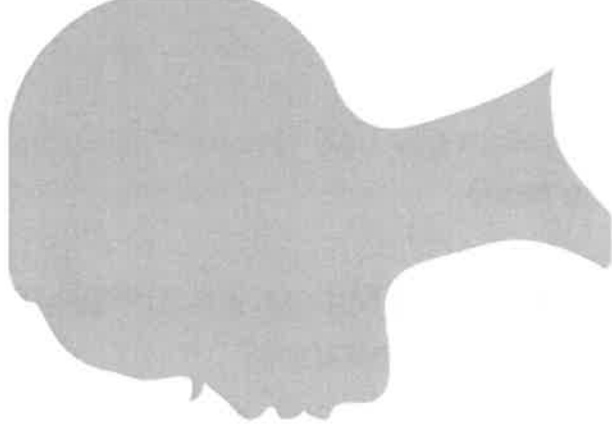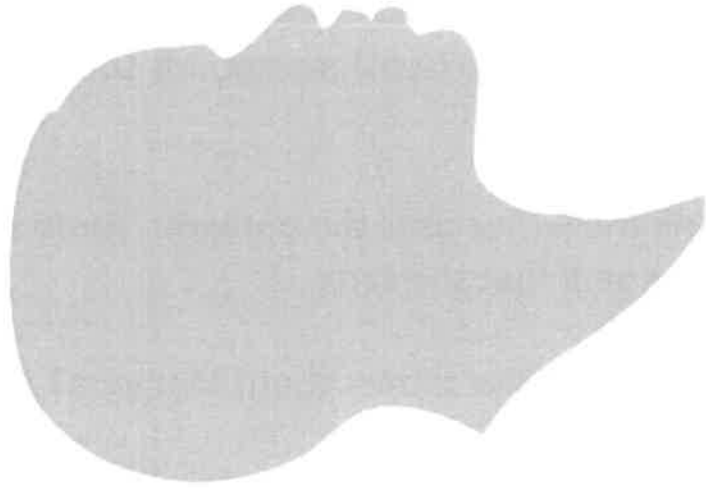*From John Steptoe: Mufaro's Beautiful Daughters*

Mufaro Questions 1
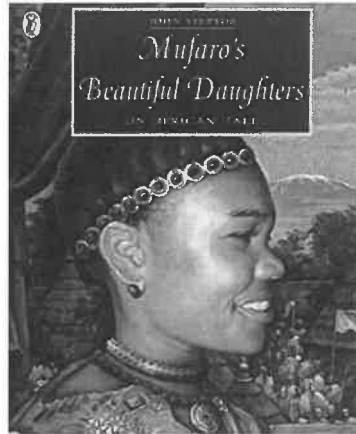
1. How long would it take to journey from the village to the city?

2. What was special about Mufaro's daughters?

3. What did Mufaro do to her sister?

4. How did Nyasha respond to her?

5. What did Nyasha grow?

6. Why did people say that her crops grew so well?

7. What did Nyasha spot underneath a yam vine?

8. Why did she decide to be kind to the snake?

9. What name did she give it?

10. Why didn't Mufaro do anything about the way that Manyara treated Nyasha?

Mufaro Questions 2
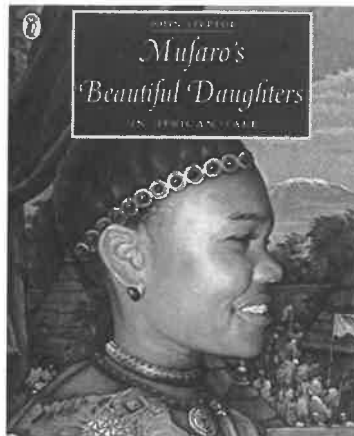
1. What does Manyara say to Nyasha? What is Nyasha's response? Does it surprise you? Why/Why Not?

2. How does Manyara explain her bad temper? Do you agree with her explanation? Why/Why Not?

3. Do you agree with Nyasha that Manyara is unhappy? Is it always true that people who are unkind are unhappy?

4. Why do you think that Nyasha spends her time growing plants and vegetables?

5. What would be another way of saying that her crops were bountiful?

6. Are you surprised at the way Nyasha responds to the snake? Why/Why Not?

7. Why do you think the writer uses the phrases: 'some said it was her singing...' and 'It was said that she sang ...'

8. Why doesn't Nyasha tell her father about Manyara? Is she right to stay quiet? Why/Why Not?

Three Outlines

Mufaro Questions 1 – Possible Answers

1. How long would it take to journey from the village to the city?
Half a day.

2. What was special about Mufaro's daughters?
They were beautiful.

3. What did Mufaro do to her sister?
She teased her.

4. How did Nyasha respond to her?
She was gentle.

5. What did Nyasha grow?
Millet, sunflowers, yams and vegetables.

6. Why did people say that her crops grew so well?
Because of her singing.

7. What did Nyasha spot underneath a yam vine?
A small garden snake.

8. Why did she decide to be kind to the snake?
It would keep away creatures that might spoil the plants.

9. What name did she give it?
Nyoka

10. Why didn't Mufaro do anything about the way that Manyara treated Nyasha?
She didn't want to upset her father.

What to do today

1. Imagine how characters might react

- Read *Messenger's Proclamation.*
- In the story this proclamation is read to Mufaro, Manyara and Nyasha. How do you think they will react? If you were in the story, how would you react?

2. Read the next part of the story

- Read *Manyara's Journey* to find out what happened to her after she had heard the proclamation.
- Write down what you would have done, with each of the people that she met.

3. Listen to the whole story being read.

- Listen to this reading of the whole story.
  https://www.youtube.com/watch?v=dP9cQkS8p2Q&t=24s
- Answer the *Story Questions.*

4. Think about the character of the King

- Write notes around The King. What do we know about him from the story? What do you think about him? Was he fair?

Try the Fun-Time Extras

Can you try telling the story of Mufaro's Beautiful Daughters to somebody else?

Can you act out a scene from the story?

Messenger's Proclamation

The most worthy and beautiful daughters in the land are invited to appear before the King, and he will choose one to become Queen!

Manyara's Journey

Read about Manyara's journey and decide what you would do.

That night when everyone was asleep, Manyara stole quietly out of the village. She had never been in the forest at night before and she was frightened, but her greed to be the first to appear before the king drove her on. In her hurry, she almost stumbled over a small boy who suddenly appeared, standing in the path.

The boy told her he was hungry and asked her politely for something to eat.

1. What would you do? Why?

After travelling for what seemed to be a great distance, Manyara came to a small clearing. There, silhouetted against the moonlight was an old woman seated on a large stone.

The woman gave advice. She told Manyara that she would see laughing trees but must not laugh in return. She told her that she would meet a man with his head under his arm and that she must be polite to him.

2. What would you say? Why?

Manyara came to the grove of trees and they did seem to laugh at her.

**3. What would you do if the trees laughed at you? Why?**

Later Manyara saw the man with head tucked under his arm.

4. What would you do? Why?

Story Questions

1. Were you surprised about how Manyara treated those she met?
    Why/Why Not?

2. What did Manyara say about the monster that she saw?

3. How do you think Nyasha felt as she went into the chamber?

4. Why did Mufaro say that he was the happiest father in all the land, at
    the end of the story?
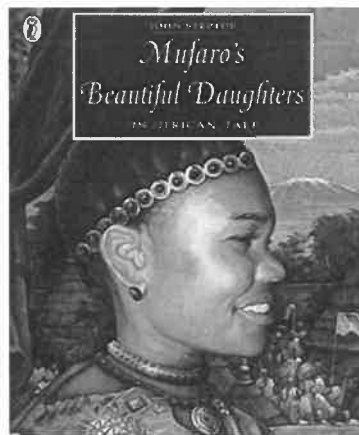
The King

What to do today

1. Summarise the story

- Use words and pictures on *Story Summary* to make a version of the story: Mufaro's Beautiful Daughters.
- You could watch the reading of the story again to help you: https://www.youtube.com/watch?v=dP9cQkS8p2Q
- Use your *Story Summary* to help you tell the story to somebody else.

2. Read an imaginary letter

- Read *Manyara's Letter*.
- This is a letter from the older future Manyara to her younger self. What advice does she give herself? What do you think she has learnt?

3. Now for some writing

- Use *Future Letter Planner* to plan a letter from a future you to you now. Think what you will be doing in the future and what advice you will give yourself.
- Write your letter out carefully.

Well done! Share your writing with a grown-up. Ask them what advice they would give their younger selves.

Try the Fun-Time Extra

- Can you interview some more people to find out the advice that they would give their younger selves?
- Can you tell someone far away about the story of Mufaro and his Beautiful Daughters?
- Can you make an illustration of the monster that Manyara saw in the chamber?

Story Summary

Manyara's Letter

Dear Manyara,

I think you will be excited to know that I am writing you this letter from a royal palace. My home is the most amazing royal palace that you can imagine.

However, I think you will be surprised to learn that I am live here because I am now a servant to my sister, the queen. Yes, that's right. Nyasha has become a queen and I am her servant. I live in the palace and I take care of her. You won't believe me, but I am happy with this. I know though that you will be disappointed to hear of how things turned out.

It wasn't such a good idea to have been so envious of Nyasha. If you still have the chance, then be kind to her. Our father loves us both; I am completely sure of that. When people praise Nyasha, it does not mean that they are criticising you. Enjoy being with Nyasha and enjoy her kindness to you.

You should also not rush away in secret, if you get exciting news. Talk to your family. They love you and you need them. Don't always try to be first.

Manyara, remember to be kind to people that you meet. They won't always be who you think they are.

I hope you are very happy today, my dear younger self. Say hello to our father and sister for me.
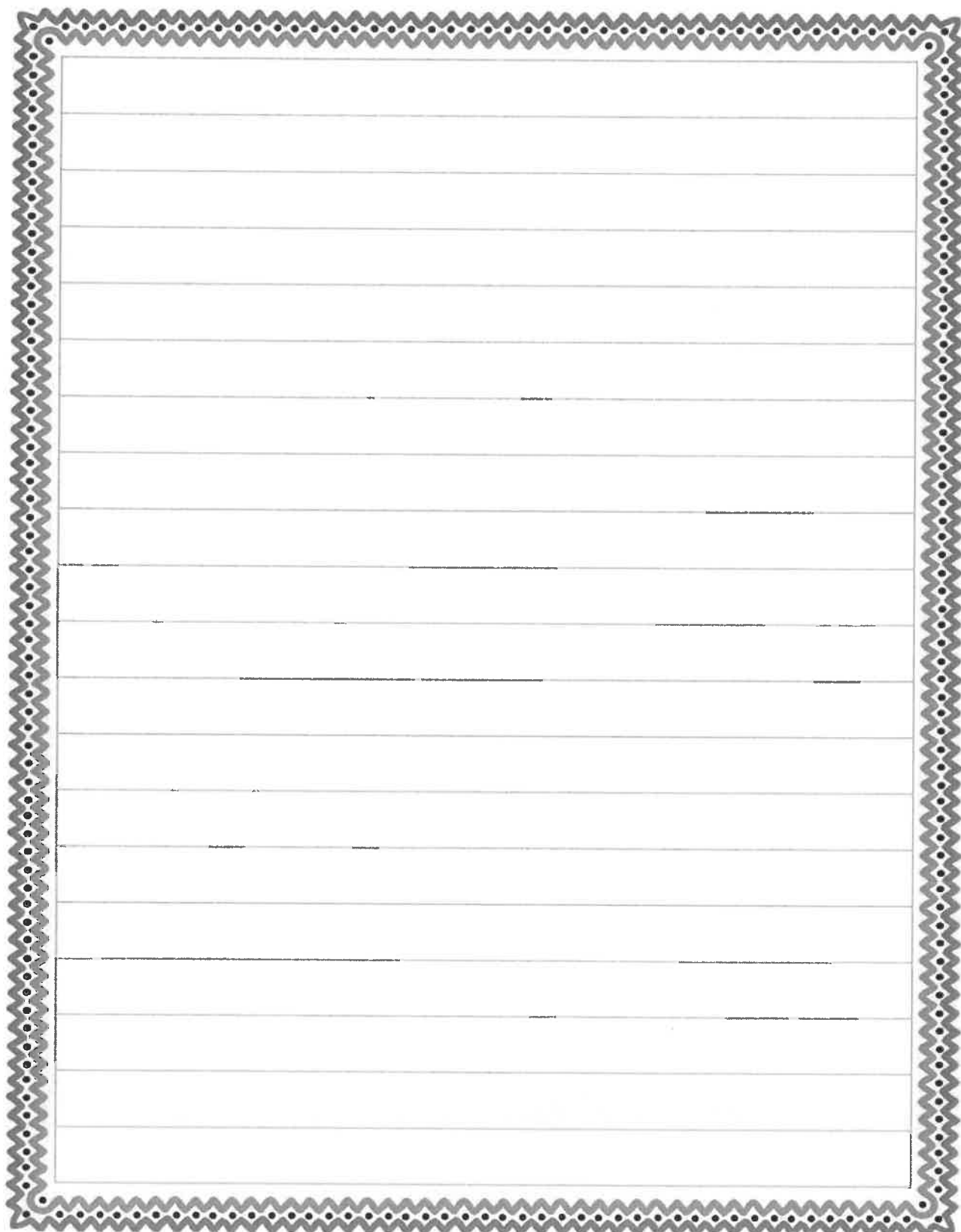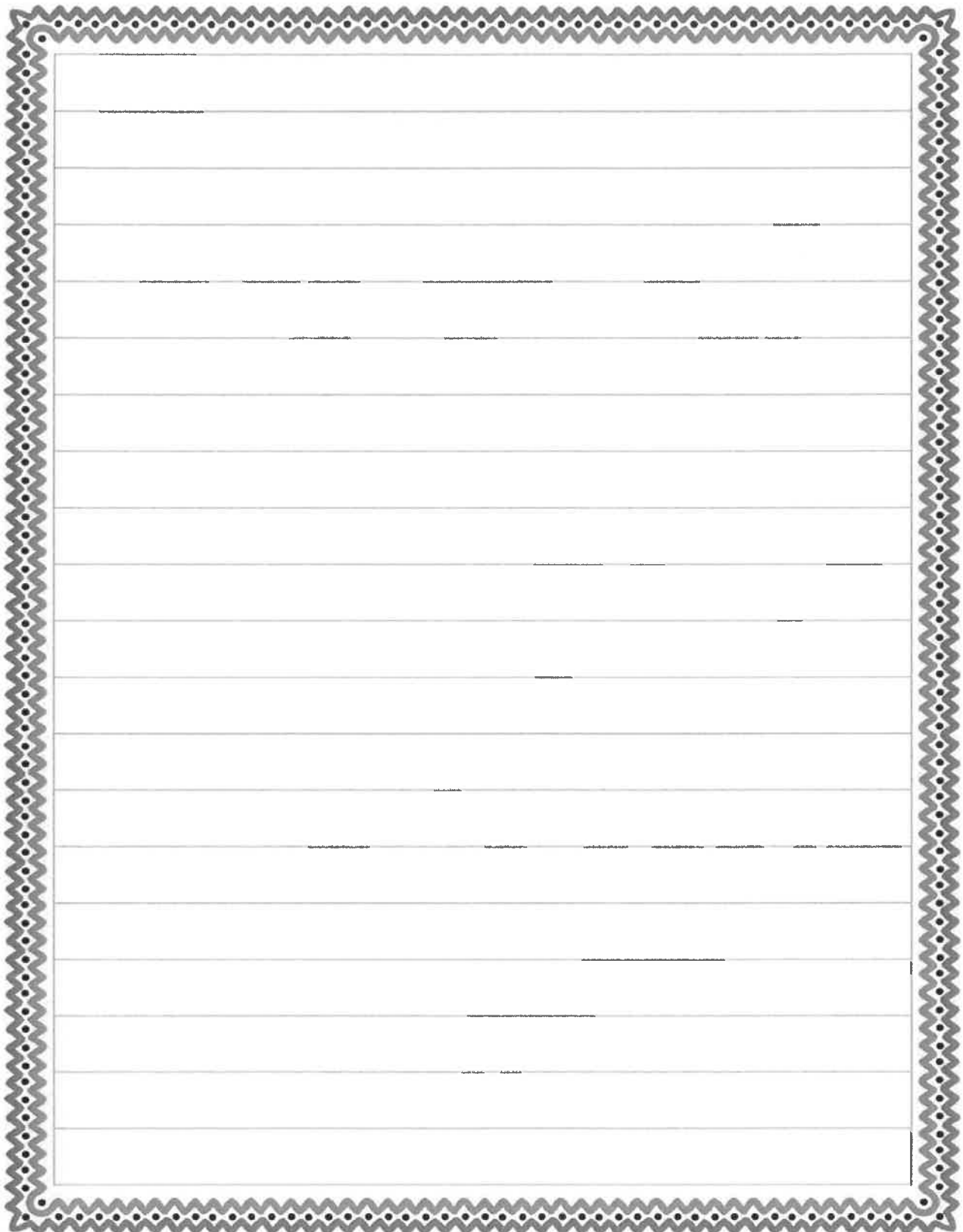
Your Manyara.

Future Letter Planner

Where are you living?	
What are you doing?	
Advice – things you should do.	
Advice – things you should not do.	

Future Letter

Write your letter from your future self here.

What to do today

1. Read a poem

- Read the poem: *Summer and Winter*. **Read it twice: once in your head and once out loud.**
- Read and think about the *Poetry Questions*. Write some of your answers on the sheet.

2. Remind yourself about adverbials

- Use the *PowerPoint* giving some teaching on Adverbials. If you can't access this, then use the *Revision card* to remind yourself about adverbials.
- Write endings for the *Fronted Adverbials*. Challenge yourself to write two different endings for each.

## 3. Choose your favourite poem.

- The fronted adverbials come from these four poems:
    - Windy Nights
    - Pike
    - The Sandpiper
    - Duck's Ditty
- Read each of the poems out loud. Decide which is your favourite.

Share your favourite poem with a grown-up. Explain to them why you like it best and find out from them which is their favourite of the four poems.

Try the Fun-Time Extra

- Can you try to learn some of your favourite poem off by heart?

Summer and Winter
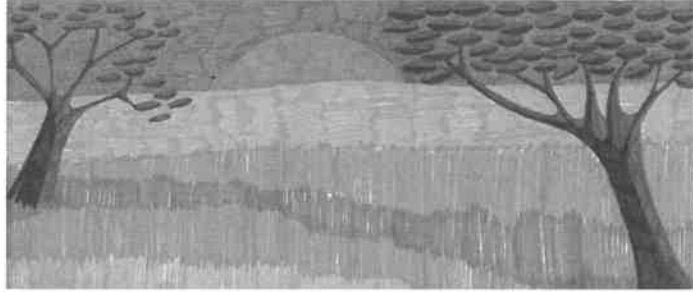
When a warm dawn brings
the sun to your eyes,
blink three times –
it's time to rise.

When cold winds whistle
around your head,
pull it under the blankets
and stay in bed.

by Michael Dugan

Poetry Questions

What do you **like** about this poem? Is there anything you **dislike**? Why?	What does this poem make you **think** about? Does it remind you of anything?
What patterns can you find in this poem?	What **puzzles or questions** does this poem raise?

Revision Card - Adverbials

Verbs

Verbs indicate that someone or something is doing, feeling or being.

The tide creeps up the sand.
The shadows cross the land.
The dew dries on the dock.
The green moss spreads!

Usually verbs have the name of a person or thing or a pronoun in front of them.

Adverbials

Adverbials tell us more about a **verb**.

The snail slid.

The snail slid **with no hurry**.
The snail slid **across the leaf**.
The snail slid **silently**.

In each sentence, the verb is modified by the adverbial.

Adverbials

Adverbials tell us more about a **verb**.

Adverbials can be

a word,

a phrase,

or a clause.

slowly

at a snail's pace

while the whole world slept

Adverbials

Adverbials can be in different places in a sentence.

The snail slid.   The snail slid.

The snail slid **with no hurry**.   **With no hurry**, the snail slid.
The snail slid **across the leaf**.   **Across the leaf**, the snail slid.
The snail slid **silently**.   **Silently**, the snail slid.

When it is at the start of a sentence, the **adverbial** is called a fronted adverbial.

Fronted Adverbials

Can you think of the main sentences that could follow these Fronted Adverbials?

1. In the brown water,

2. Late in the night when the fires are out,

3. Whenever the wind is high,

4. At the edge of the tide,

5. Whenever the moon and stars are set,

6. Out from under the reeds,

7. All night long in the dark and wet,

8. On toothpick legs,

9. All along the backwater,

10. High in the blue above,

11. Whenever the trees are crying aloud,

Windy Nights

Whenever the moon and stars are set,
Whenever the wind is high,
All night long in the dark and wet,
A man goes riding by.
Late in the night when the fires are out,
Why does he gallop and gallop about?

Whenever the trees are crying aloud,
And ships are tossed at sea,
By, on the highway, low and loud,
By at the gallop goes he.
By at the gallop he goes, and then
By he comes back at the gallop again.

by Robert Louis Stevenson

Pike

In the brown water,
Thick and silver-sheened in the sunshine,
Liquid and cool in the shade of the reeds,
A pike dozed.
Lost among the shadows of stems
He lay unnoticed.
Suddenly he flicked his tail,
And a green-and-copper brightness
Ran under the water.

Out from under the reeds
Came the olive-green light,
And orange flashed up
Through the sun-thickened water.
So the fish passed across the pool,
Green and copper,
A darkness and a gleam,
And the blurred reflections of the willows on the opposite
bank
Received it.

by Amy Lowell

The Sandpiper

At the edge of tide
He stops to wonder,
Races through
The lace of thunder.

On toothpick legs
swift and brittle,
he runs and pipes
and his voice is little.

But small or not,
he has a notion
To outshout
The Atlantic Ocean.

by Frances M Frost

Duck's Ditty

All along the backwater,
Through the rushes tall,
Ducks are a-dabbling,
Up tails all!

Ducks' tails, drakes' tails,
Yellow feet a-quiver,
Yellow bills all out of sight
Busy in the river!

Slushy green undergrowth
Where the roach swim—
Here we keep our larder,
Cool and full and dim.

Everyone for what he likes!
We like to be
Heads down, tails up,
Dabbling free!

High in the blue above
Swifts whirl and call—
We are down a-dabbling
Up tails all!

by Kenneth Grahame

What to do today

1. Read a poem

- Read *Winter*.
- Write on the text to show the parts of the poem that you particularly like, any patterns that you can see and any questions or puzzles that you find.

2. Practise Adverbials

- Use the *Revision Card* to remind yourself about adverbials.
- Practise using adverbials by writing sentences with a fronted adverbial that could go with the months of the year.
- Write your sentences on *Month Poem Idea*. Challenge yourself to write at least 6 sentences. *Adverbial Ideas* and *Preposition Examples* might be helpful.

3. Choose a favourite poem

- Pick your favourite month or the month of your birthday. Can you find a poem that would match this month well? You could use one of the poems we have read, or you could search online. Start with this website: https://childrens.poetryarchive.org/
- When you have found your poem, write all of it or some of it out very carefully.

Try the Fun-Time Extra

- Can you illustrate your favourite poem?
- Can you record yourself reading it and send the recording to someone else?

Winter

Clouded with snow
The cold winds blow,
And shrill on leafless bough
The robin with its burning breast
Alone sings now.

The rayless sun,
Day's journey done,
Sheds its last ebbing light
On fields in leagues of beauty spread
Unearthly white.

Thick draws the dark,
And spark by spark,
The frost-fires kindle, and soon
Over that sea of frozen foam
Floats the white moon.

by Walter de la Mere

Revision Card – Adverbials

When?

Adverbials

The sun shed its light.

When the world was cold, the sun shed its light.

Before the snow melted, the sun shed its light.

Right at that moment, the sun shed its light.

Adverbials can answer the question: *When?*

Adverbials

Adverbials often open with a **preposition**.

With a ghostly appearance, the moon rose.

Through the cold air, the moon rose.

In the winter sky, the moon rose.

Thinking of a preposition can help you to think of an adverbial.

Where?

Adverbials

The sun sheds its light.

From high in the sky, the sun sheds its light.

Over the cold earth, the sun sheds its light.

Into the darkness, the sun sheds its light.

Adverbials can answer the question: *Where?*

How?

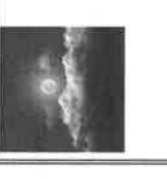### Adverbials

The sun shed its light.

Brightly, the sun shed its light.

With warmth and colour, the sun shed its light.

Like an old friend returning, the sun shed its light.

Adverbials can answer the question: *How?*

Month Poem Ideas

Write a sentence with a fronted adverbial to match the month of the year.

J	
F	
M	
A	
M	
J	
J	
A	
S	
O	
N	
D	

Adverbial Ideas

In the dark of the night,

Curled up and hidden,

Frolicking and bleating,

Wild and noisy,

Splashing and jumping,

Wet and miserable,

Brightly shining,

Roaring and speeding,

Cold and fresh,

Lined up on the wire,

Preposition Examples

above

after
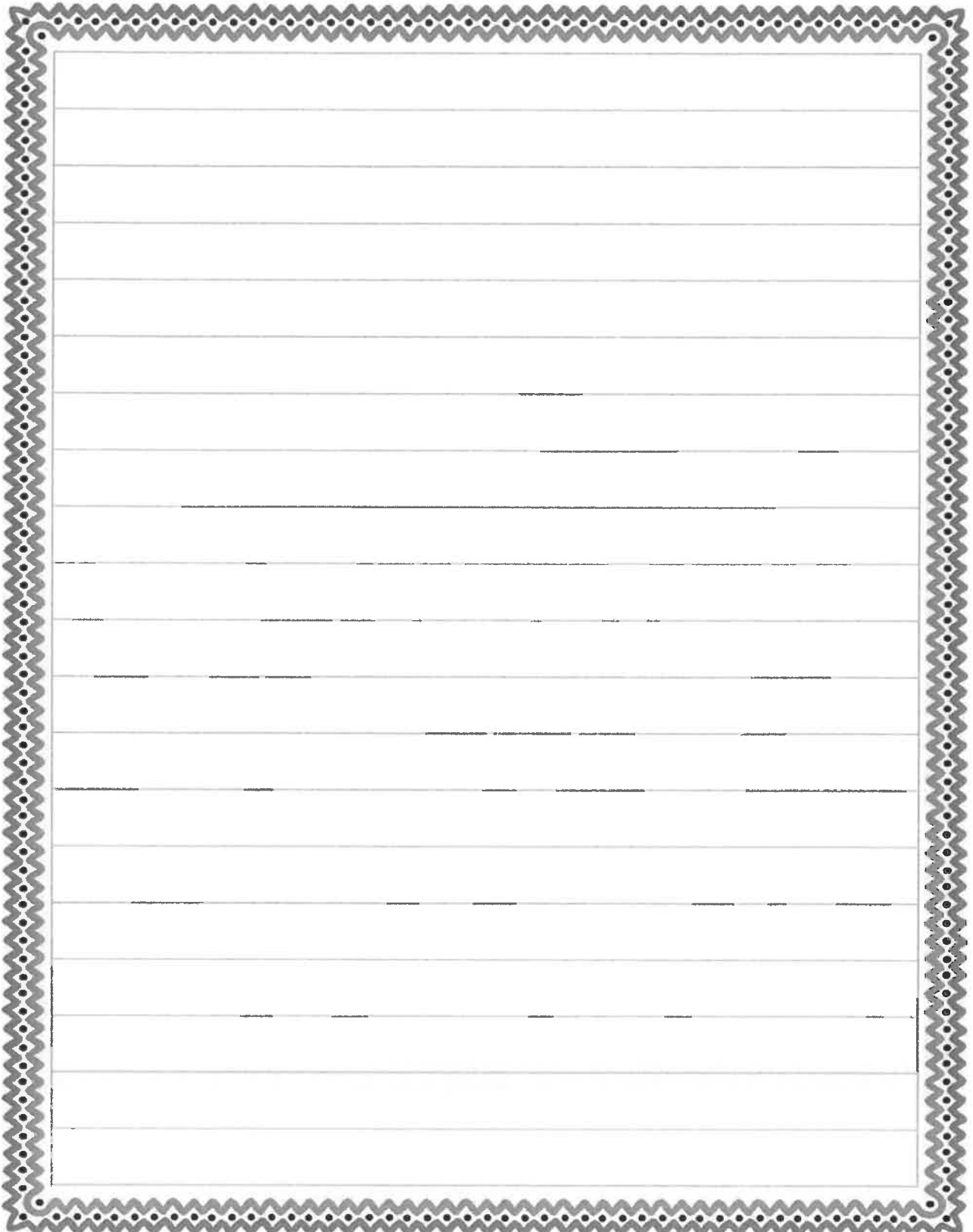
against

below

beneath

beyond

on

round

under

amongst

into

amidst

My favourite poem

Write all or part of your favourite poem carefully here.