

Year 6 maths – Summer 2 Week beginning: 22.6.20

Theme	Graphs and averages (Lesson 11 of 12) Converting Miles into Kilometres	Graphs and averages (Lesson 12 of 12) Reading Line Graphs	Position and Movement (Lesson 1 of 4) Describing position with negative numbers	Position and Movement (Lesson 2 of 4) Describing reflections	Position and Movement (Lesson 3 of 4) Describing Movement
Factual fluency (to aid fluency)	Rounding decimals Activity	Conversion between imperial and metric Activity	Plotting co-ordinates Activity	Objects in 4 quadrants Activity	Objects in 4 quadrants Activity
<p>Problem/ activity of the day</p> <p style="color: red;">Remember, just like in class, you can still show the depth of your knowledge LINK</p>	<p>(Lesson 1 resources below) <u>MAKING LINKS:</u> Last week, we read information on line graphs. Today we are going to convert between miles and kilometres.</p> <p><u>THINK: (support below)</u> Can you help me with this problem? A mile is actually 1.60934km but two of my friends were debating on whether it mattered if they converted 1 mile to 1.6km or 1.609km. Does it make that much difference?</p> <p>Our problem is on textbook page 252. Look at it now.</p> <p><u>SEE: (model below)</u> Look for how to solve the problem on page 252 of your textbook.</p> <p><u>DO:</u> Use what you have learnt today to solve: <u>Part 1: questions 1 and 2</u> from textbook page 253. Check your answers before moving onto: <u>Part 2:</u> Workbook, Chapter 14, Worksheet 11, pages 173-174.</p>	<p>(Lesson 2 resources below) <u>MAKING LINKS:</u> Yesterday we converted between miles and kilometres. Today we are going to use that knowledge in reading line graphs.</p> <p><u>THINK: (support below)</u> Can you help me with this problem? How can we use the line graph and the diagrams in our textbook to help us work out how far apart the towns are in miles and kilometres?</p> <p>Our problem is on textbook page 254. Look at it now.</p> <p><u>SEE: (model below)</u> Look for how to solve the problem shown on page 255 of your textbook.</p> <p><u>DO:</u> Use what you have learnt today to solve: <u>Part 1: questions 1 and 2</u> from textbook page 256. Check your answers before moving onto: <u>Part 2:</u> Workbook, Chapter 14, Worksheet 12, page 175.</p>	<p>(Lesson 3 resources below) <u>MAKING LINKS:</u> Yesterday we read line graphs. Today we are going to describe position with negative numbers.</p> <p><u>THINK: (support below)</u> Can you help me with this problem? My friend wants to use co-ordinates to describe the position of each of the points on the grid. Is it possible without the x and y axes (plural of axis)?</p> <p>Our problem is on textbook page 168. Look at it now.</p> <p><u>SEE: (model below)</u> Look at the different ways to solve the problem shown on pages 168 - 170 of your textbook. Watch the lesson video.</p> <p><u>DO:</u> Use what you have learnt today to solve: <u>Part 1: question 1</u> from textbook page 171. Check your answers before moving onto: <u>Part 2:</u> Workbook, Chapter 13, Worksheet 3, pages 132-134.</p>	<p>(Lesson 4 resources below) <u>MAKING LINKS:</u> Yesterday we described position with negative numbers. Today we are going to describe reflections.</p> <p><u>THINK: (support below)</u> Can you help me describe the reflection of the shape, in our textbooks, when we look at it through a mirror placed on the lines labelled 'mirror'?</p> <p>Our problem is on textbook page 183. Look at it now.</p> <p><u>SEE: (model below)</u> Look at the ways to solve the problem shown on pages 183-184 of your textbook.</p> <p><u>DO:</u> Use what you have learnt today to solve: <u>Part 1: questions 1 and 2a</u> from textbook page 185-186 Check your answers before moving onto: <u>Part 2:</u> Workbook, Chapter 13, Worksheet 6, pages 139-140.</p>	<p>(Lesson 5 resources below) <u>MAKING LINKS:</u> Yesterday we described reflections. Today we are going to describe movement.</p> <p><u>THINK: (support below)</u> Can you help me with this problem? Is it possible that the figures x, y or z are reflections of the red shape? Could the red shape have been reflected in the x or y axis to end up in any of the positions shown in our textbook?</p> <p>Our problem is on textbook page 187. Look at it now.</p> <p><u>SEE: (model below)</u> Look at ways to solve the problem on pages 188 - 192 of your textbook. Watch the lesson video.</p> <p><u>DO:</u> Use what you have learnt today to solve: <u>Part 1:</u> complete the question from textbook page 193. Check your answers before moving onto: <u>Part 2:</u> Workbook, Chapter 13, Worksheet 7, pages 141.</p>
Methods, tips, clues & checks	Day 1 resources and answers (below)	Day 2 resources and answers (below)	Day 3 resources and answers (below)	Day 4 resources and answers (below)	Day 5 resources and answers (below)

See below for resources to support you to THINK-SEE-DO

DAY 1 RESOURCES:

THINK: Our problem is on textbook page 252.

A mile is actually 1.60934km but two of my friends were debating on whether it mattered if they converted 1 mile to 1.6km or 1.609km.

Does it make that much difference?

DO:

Part 1: complete **questions 1 and 2** from textbook page 253.

Check your answers before moving onto:

Part 2: Workbook, Chapter 14, Worksheet 11, pages 173-174.

Deepening:

Write an explanation on how to convert between miles and kilometres.

SEE: Look for how to solve the problem on page 252 of your textbook.

Tens	Ones	Tenths	Hundredths	Thousandth

If I know how many kilometres are in a mile I can use a place value chart to work out 10, 100, 1000 miles by multiplying by 10, 100, 1000, etc.

$$1 \text{ mile} = 1.6\text{km}$$

$$10 \text{ miles} = 16\text{km}$$

$$100 \text{ miles} = 160 \text{ km}$$

$$1000 \text{ miles} = ?\text{km}$$

$$1 \text{ mile} = 1.609\text{km}$$

$$10 \text{ miles} = 16.09\text{km}$$

$$100 \text{ miles} = 160.9\text{km}$$

$$1000 \text{ miles} = ?\text{km}$$

Use known facts to help you to work out what 150 miles would be in kilometres.

$$150 \text{ miles} = 100 \text{ miles} + 50 \text{ miles}$$

We can calculate this as:

$$100 \text{ miles} = 160\text{km}$$

$$50 \text{ miles} = 100 \text{ miles} \div 2 = 160\text{km} \div 2 = 80\text{km}$$

$$160\text{km} + 80\text{km} = 240\text{km}$$

$$\text{Or } 150 \text{ miles} = 100 \text{ miles} + (5 \times 10 \text{ miles})$$

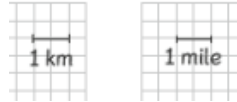
$$160\text{km} + (5 \times 16\text{km}) = 240\text{km}$$

DAY 2 RESOURCES:

THINK: Our problem is on textbook page 254.

How can we use the line graph and the diagrams in our textbook to help us work out how far apart the towns are in miles and kilometres?

Take note of the scale on the diagrams:



DO:

Part 1: **questions 1 and 2** from textbook page 256.

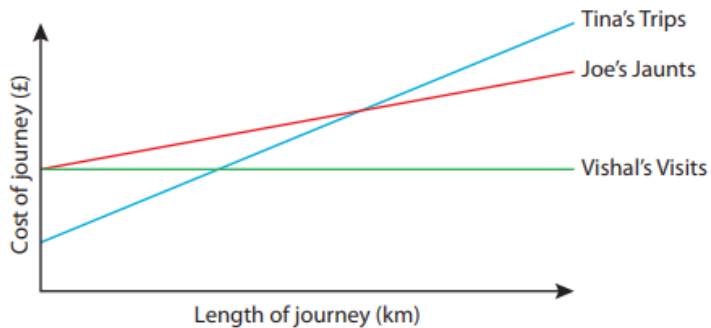
Check your answers before moving onto:

Part 2: Workbook, Chapter 14, Worksheet 12, page 175.

Deepening:

Mastery with Greater Depth

Three taxi companies each work out the cost of a journey in different ways. I have taken lots of journeys with each of the companies, and have recorded each time how long the journey was (in km) and the cost of the journey (in £). I have represented these data on this graph.



What's the same and what's different about the ways in which the three companies work out the cost of a journey?

Which might you choose if you wanted to book a taxi to make a journey?

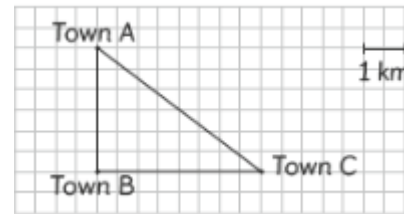
Explain your reasoning.

SEE: Look for how to solve the problem shown on page 255 of your textbook.

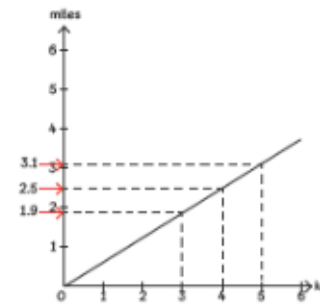
Page 255 shows three pieces of information for converting between miles and kilometres. Look at all three for each conversion.

The grids shows the distance between the towns.

Check the scale to see how many miles or kilometres there are between each of the towns.



The graph shows how to read and compare the distance in miles and kilometres.



If converting from miles to kilometres start on the axis that shows miles and read across and down to read the conversion to kilometres.

If converting from kilometres start on the axis that shows kilometres and read up and across to miles.

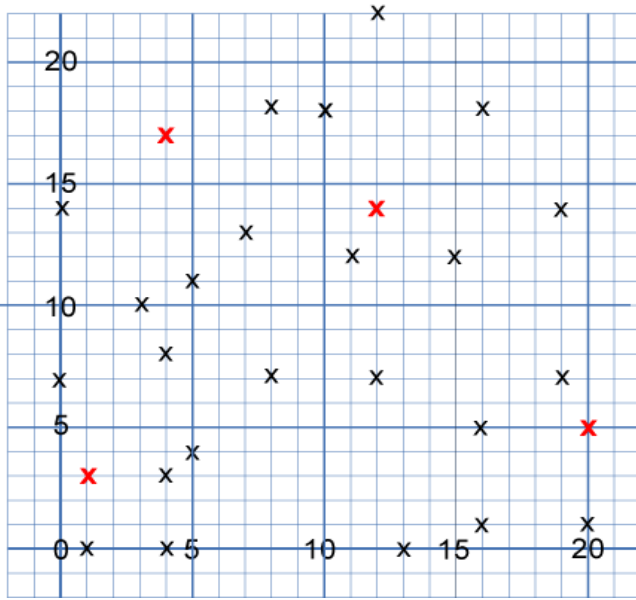
The table guides you towards collecting the right information to answer the question and compare distances in miles and kilometres. Use all three pieces of information to help you to answer the question.

DAY 3 RESOURCES:

THINK: Our problem is on textbook page 168.
My friend wants to use co-ordinates to describe the position of each of the points on the grid. Is it possible without the x and y axes (plural of axis)? Do you need to know where the axes are to plot co-ordinates?

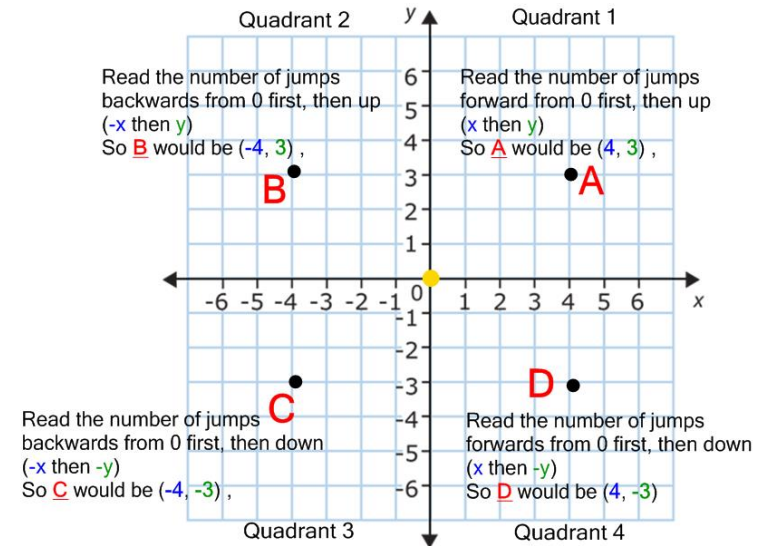
DO:
Part 1: **question 1** from textbook page 171.
Check your answers before moving onto:
Part 2: Workbook, Chapter 13, Worksheet 3, pages 132-134.

Deepening: On the graph below there are 28 marked points.

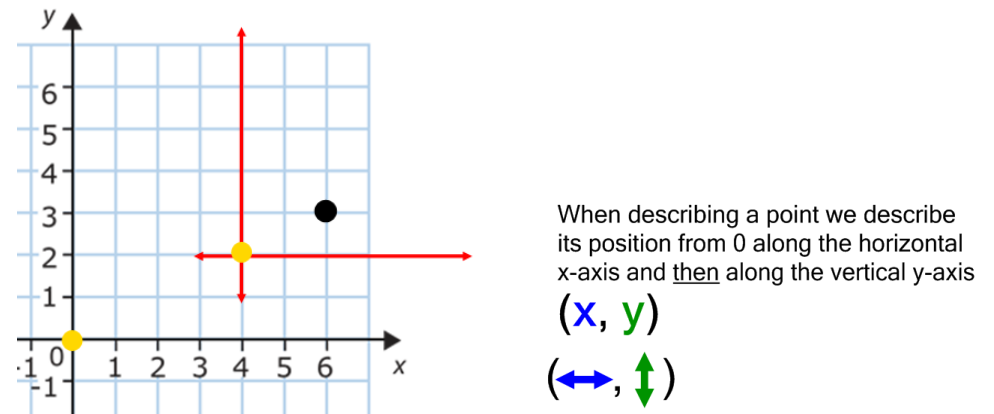


These points all mark the vertices (corners) of eight hidden squares. Each of the 4 red points is a vertex shared by two squares. The other 24 points are each a vertex of just one square. All of the squares share just one vertex with another square. All the squares are different sizes. There are no marked points on the sides of any square, only at the vertices. Can you find the eight hidden squares?

SEE: Look at the different ways to solve the problem shown on pages 168 - 170 of your textbook. Watch the lesson [video](#). Remember how to read and describe the position of each point using co-ordinates.



If we move the axes (plural of axis) the co-ordinates for the position of the point will change too.



DAY 4 RESOURCES:

THINK: Our problem is on textbook page 183.

Can you help me describe the reflection of the shape, in our textbooks, when we look at it through a mirror placed on the lines labelled 'mirror'?

Does the size of the shape or its colours change when you look at its reflection? Does the distance from the mirror line change?

If you don't have an appropriate mirror you can see the reflection of the shape by placing a mobile phone (switched OFF) on the mirror line. **If you are borrowing a phone please check with the owner first!**

DO:

Part 1: questions 1 and 2a from textbook page 185-186: draw the reflection of the letter shown on each grid in the questions on your textbook pages.

You might find it useful to shade in or draw the original letter before starting to construct its reflection. Remember to use a ruler!

Check your answers before moving onto:

Part 2: Workbook, Chapter 13, Worksheet 6, pages 139-140.

Deepening:

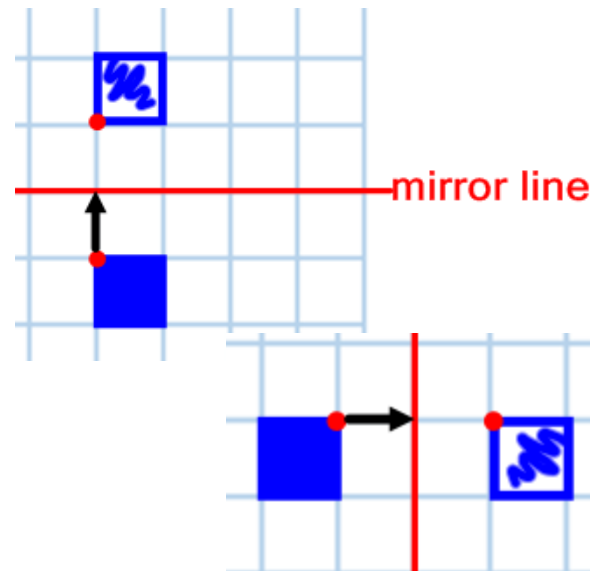
Complete the reflection of the letter shown in **question 2b**, page 186 of your textbooks. Be careful when drawing the diagonal lines.

SEE: Look at the ways to solve the problem shown on pages 183 to 184 of your textbook.

Remember, the reflected image will be the same distance from the mirror line (or axis).



Turn the image to a position where you can clearly see the reflection of the image AND draw the new image at the same time.



CAN YOU?

I can clearly see the image in the mirror.
I can easily count the squares from the mirror line to the shape to work out how far away from the mirror line I should draw my reflected shape.
I can draw a dot on the corner of the shape I want to reflect to help me position the reflected shape.



DAY 5 RESOURCES:

THINK: Our problem is on textbook page 187.

Is it possible that the figures x, y or z are reflections of the red shape?

Could the red shape have been reflected in the x or y axis to end up in any of the positions shown in our textbook?

You can draw on the photocopy of the question to help you to position the figures.

DO:

Part 1: complete the question from textbook page 193.

You can draw on the page to help you to position the figures.

Check your answers before moving onto:

Part 2: Workbook, Chapter 13, Worksheet 7, page 141.

Deepening:

Complete the table of co-ordinates for question 3, on workbook page 145.

Remember, even without the axis drawn on, co-ordinates are still read and written (x, y) .

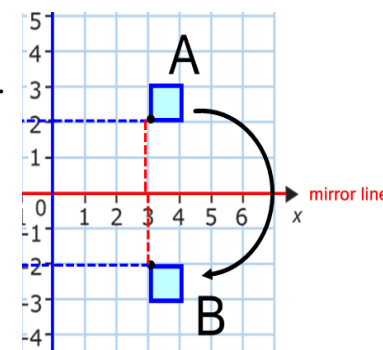
SEE: Look at ways to solve the problem on pages 188 to 192 of your textbook. Watch the lesson [video](#).

Think about where the image would start for it to be reflected in the x-axis or y-axis and end up in its new position.

We can use the axis as a mirror line to reflect the shape and describe the movement.

The distance from the axis must be the same.

When describing the movement of the square we can say the point $(3, 2)$ is reflected in the x-axis $(3, -2)$.

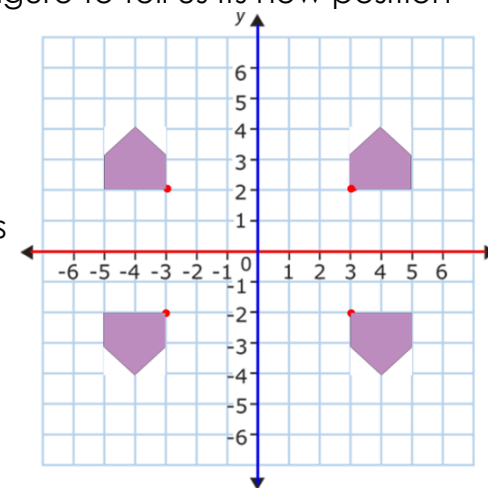


We can use the same point on our figure to tell us its new position when it is reflected in either axis.

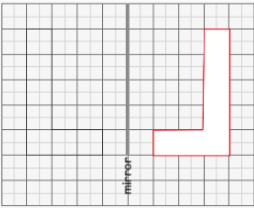
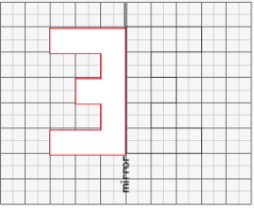
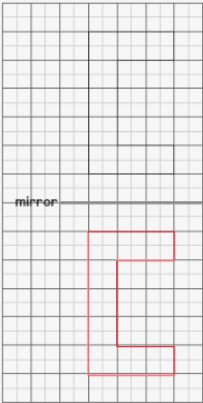
The figure that starts at point $(3, 2)$ is reflected in the x-axis at $(3, -2)$.

The figure that starts at point $(3, -2)$ is reflected in the y-axis at $(-3, -2)$.

Draw a dot on your shape to make reflecting your shape easier.



ANSWERS – part 1:

<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>	<u>Day 4</u>	<u>Day 5</u>												
<p>Part 1: Q.1: Sam gives the best estimate. 5km is about 3.125miles so 3 miles is a good estimate. Q.2: a) 96km, b) 220 miles, c) 10 780 km</p>	<p>Part 1: Q.1: a) £3.35, b) £1.95 Q.2: a) \$6.30, b) \$7.80</p>	<p>Part 1: Q.1: a) (-5, 2), b) (0, -5), c) (5, -5), d) (0, 5)</p>	<p>Part 1: Q.1: (a)  (b) </p> <p>Q.2a (a) </p>	<p>Part 1: Q.1:</p> <table border="1" data-bbox="1765 264 2163 413"> <thead> <tr> <th></th> <th>Reflection x-axis</th> <th>Reflection x-axis</th> </tr> </thead> <tbody> <tr> <td>A (2, 1)</td> <td>(2, -1)</td> <td>(-2, 1)</td> </tr> <tr> <td>P (2, 3)</td> <td>(2, -3)</td> <td>(-2, 3)</td> </tr> <tr> <td>E (5, 5)</td> <td>(5, -5)</td> <td>(-5, 5)</td> </tr> </tbody> </table>		Reflection x-axis	Reflection x-axis	A (2, 1)	(2, -1)	(-2, 1)	P (2, 3)	(2, -3)	(-2, 3)	E (5, 5)	(5, -5)	(-5, 5)
	Reflection x-axis	Reflection x-axis														
A (2, 1)	(2, -1)	(-2, 1)														
P (2, 3)	(2, -3)	(-2, 3)														
E (5, 5)	(5, -5)	(-5, 5)														

ANSWERS – part 2:

Day 1

Part 2: Workbook,

Q.1:

- a) 0.8km, b) 1.2km, c) 1.92km,
d) 3.6km, e) 0.25 miles,
f) 0.625miles, g) 15 miles,
h) 350 miles.

Q.2:

- a) 5km
b) 20km
c) 10km
d) 14km

DEEPENING:

Share your explanations with your teacher.

Day 2

Part 2: Workbook,

Q1:

- a) \$3.50USD
b) \$1400ASD

DEEPENING:

Answers may vary but could include reference to:

- The cost per kilometre of journey does not change no matter how long the journey if travelling with 'Vishal's Visits'
- Although travel with 'Tina's Trips' starts low the cost increases for longer journeys.
- The cost of taxi journeys start at the same price for 'Joe's Jaunts' and 'Vishal's Visits'
- Although journeys with 'Joe's Jaunts' cost more to start with than journeys with 'Tina's Trips' the longer the journey the cheaper the cost.

If I wanted to make a long journey I would go with 'Vishal's Visits' because although they start off more expensive than 'Tina's Trips' the cost remains the same no matter how long the journey. However, if I wanted to make a short journey I would go with 'Tina's Trips' as the cost is the cheapest at the beginning.

Day 3

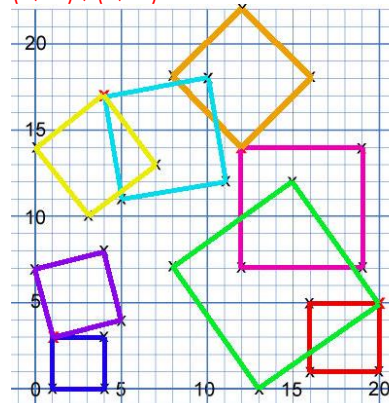
Part 2: Workbook,

Q.1:

- a. i) (-4, 4), ii) (-4, -2), iii) (6, -6),
iv) (2, 4)
b) (2, -2),
c) (-4, -6), (6, -2), (3, 1)
d) trapezium

DEEPENING:

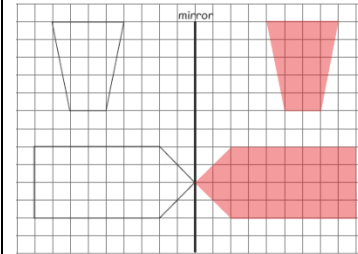
- Blue square - (1,0) , (4,0) , (1,3) , (4,3)
Purple square - (1,3) , (0,7) , (5,4) , (4,8)
Green square - (13, 0) , (20,5) , (8,7) , (15,12)
Red square - (16,1) , (20,1) , (16, 5) , (20,5)
Pink square - (12,7) , (12,14) , (19,7) , (19,14)
Orange square - (12,14) , (8,18) , (12,22) , (16,18)
Turquoise square - (5,11) , (11,12) , (10,18) , (4,17)
Yellow square - (0,14) , (3,10) , (7,13) , (4,17)



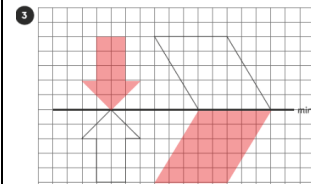
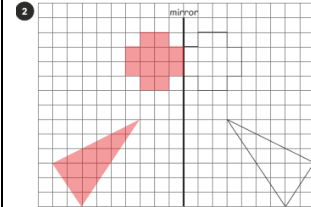
Day 4

Part 2: Workbook,

Q.1:

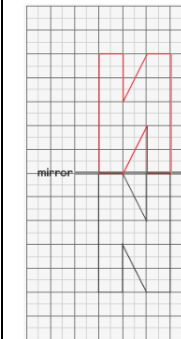


Q.2 and 3:



DEEPENING:

(b)



Day 5

Part 2: Workbook,

Q.1:

	Reflection x-axis	Reflection x-axis
A (1, 1)	(1, -1)	(-1, 1)
B (5, 3)	(5, -3)	(-5, 3)
C(4,6)	(4, -6)	(-4, 6)
D (1, 4)	(1, -4)	(-1, 4)

DEEPENING:

The value of missing co-ordinates in the table are:

$$J = (s, t+10)$$

$$L = (s+3, t+5)$$

$$M = (s+3, t+10)$$