"Between Papers" Practice

(F&H)

Summer 2018

QUESTIONS

Not A "best" Guess paper.

Neither is it a "prediction" ... only the examiners know what is going to come up! Fact! You also need to REMEMBER that just because a topic came up on paper 1 it may still come up on papers 2 or 3 ...

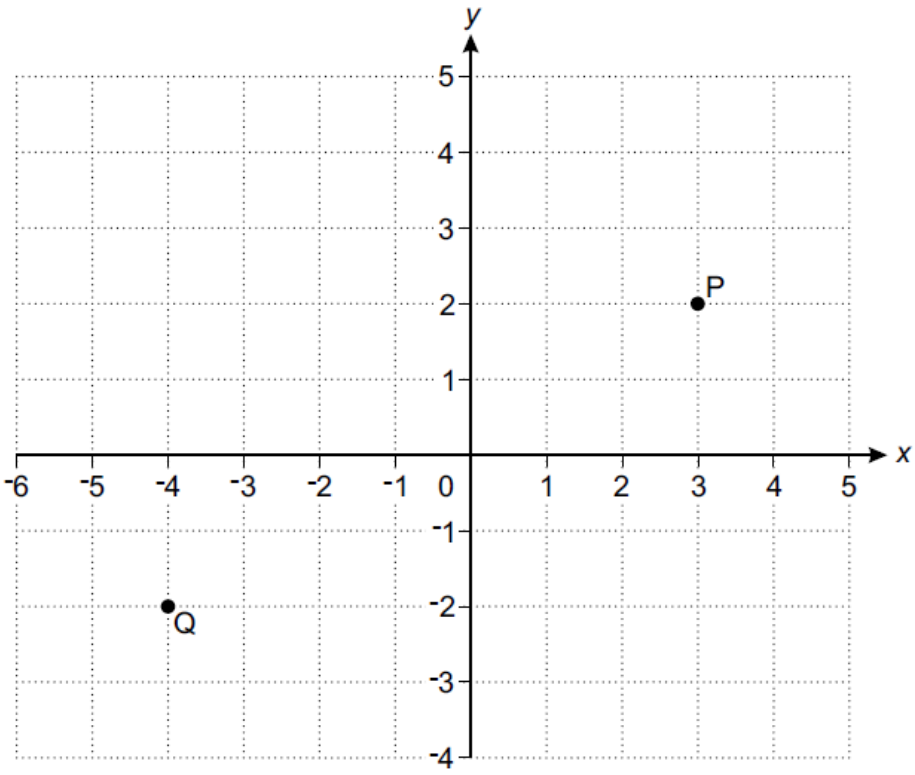
We know how important it is to practice, practice, practice .... so we've collated a load of questions that weren't examined in the OCR 9-1 GCSE Maths paper 1 but we cannot guarantee how a topic will be examined in the next papers ...

Enjoy!
Mel & Seager

Q1. Estimate the value of $\frac{4.34 \times 19.2}{11.2}$

..... [2]

Q2. Points P and Q are shown on this grid.



a) (i) Write down the coordinates of point P. (a)(i) (..... , ...) [1]

(ii) Write down the coordinates of point Q. (ii) (..... , ...) [1]

(b) Plot point R at (-2, 0). [1]

Q3. When water freezes into ice its volume increases by 9%.

What volume of water freezes to make 1962 cm^3 of ice?

..... cm^3 [3]

Q4. (a) Mia cycled 23 km, correct to the nearest km.

What is the least distance Mia could have cycled?

(a) ..... km [1]

(b) A number x, rounded to one decimal place, is 4.7.

So the error interval for x is given by $4.65 \leq x < 4.75$.

(i) A number y, rounded to two decimal places, is 4.13.

Write down the error interval for y.

(b)(i) ..... [2]

(ii) A number z, rounded to two significant figures, is 4700.

Write down the error interval for z.

(ii) ..... [2]

Q5. A game is played by rolling a fair ordinary dice and throwing a fair coin.

(a) List all the possible outcomes.

Dice	Coin

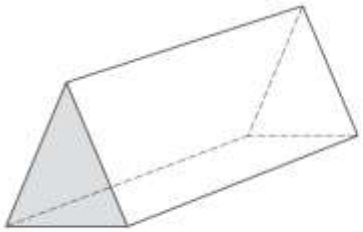
[2]

(b) Natalie wins if she gets an even number and a head.

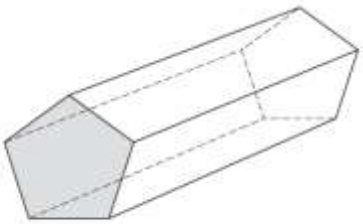
What is the probability she wins?

(b) ..... [1]

Q6. These prisms have different shapes as end faces.



Triangle



Pentagon

(a) Complete this table.

Shape of end face	Number of faces	Number of edges	Number of vertices
Triangle (3 sides)	5	9	6
Rectangle (4 sides)	.....	.....	8
Pentagon (5 sides)	.....	15	10
Hexagon (6 sides)	8	18	.....

[2]

(b) How many edges and vertices does a prism with a 100-sided end face have?

(b) edges .....

vertices ..... [2]

(c) F is the number of faces in a prism.

N is the number of sides of its end face.

Write down a formula connecting F and N.

(c) ..... [2]

Q7. Write 856 000 000 in standard form.

..... [1]

Q8. Write 4.31×10^{-3} as an ordinary number.

..... [1]

Q9. Jason is playing a game. He has two sets of cards.

One set has three red cards, numbered 1, 2 and 3.

The other set has four green cards, numbered 4, 5, 6 and 8.

Jason chooses a red card and a green card at random.

He works out his score by adding the numbers on the two cards together.

Red card	Green card: 4	5	6	8
3	.....	.....	.....	.....
2	.....	.....	.....	10
1	5	.....	.....	.....

(a) Complete the table to show all the possible scores.

[2]

(b) Work out the probability that Jason gets

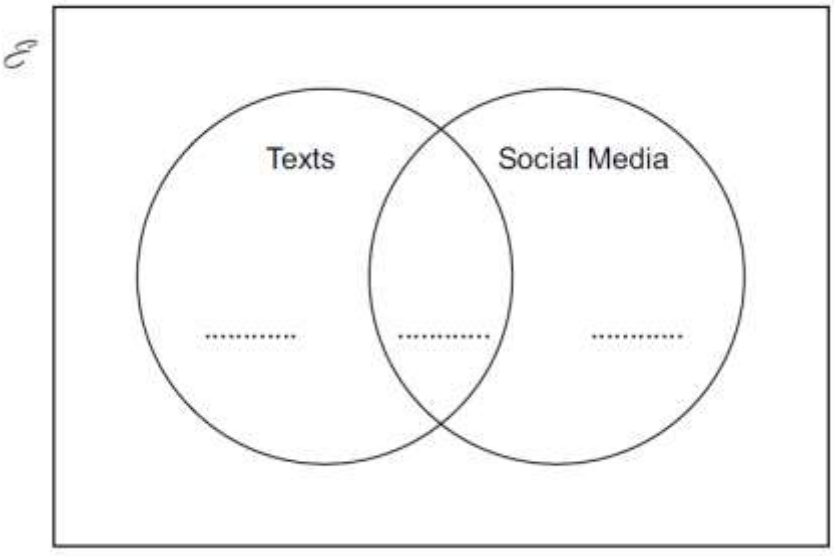
(i) a score of 10, (i) ..... [1]

(ii) a score of 9 or more. (ii) ..... [1]

Q10. 50 students were asked in a survey whether they use texts or social media.

- 20 students said they only use texts.
- 8 students said they only use social media.
- 17 students said they use both texts and social media.

(a) Put this information on the Venn diagram.



[1]

(b) How many of the students in the survey do not use texts or social media?

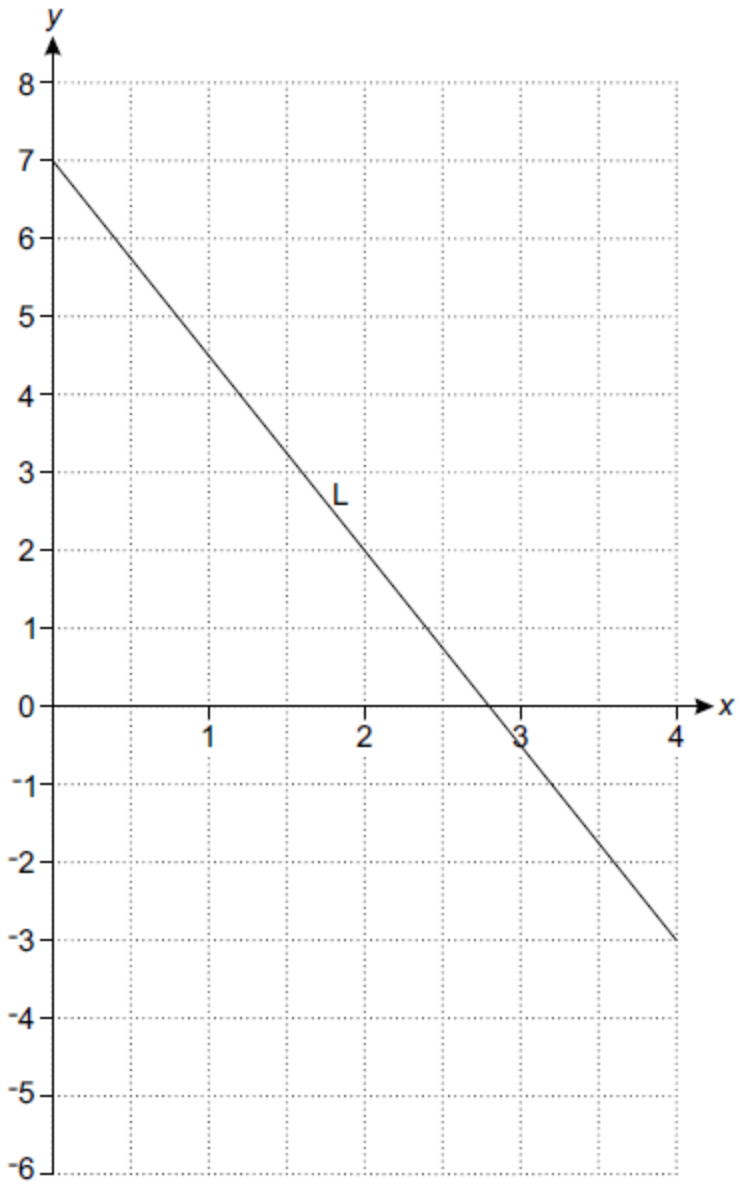
(b) ..... [2]

(c) One of the students in the survey is chosen at random.

What is the probability that this student uses texts?

(c)..... [2]

Q11. Line L is drawn on the grid below.



Work out the equation of line L.

[3]

Q12. Here are the interest rates for two accounts.

Account A
Interest: 3% per year compound interest.
No withdrawals until the end of three years.

Account B
Interest: 4% for the first year, 3% for the second year and 2% for the third year.
Withdrawals allowed at any time.

Derrick has £10 000 he wants to invest.

(a) Calculate which account would give him most money if he invests his money for 3 years. Give the difference in the interest to the nearest penny.

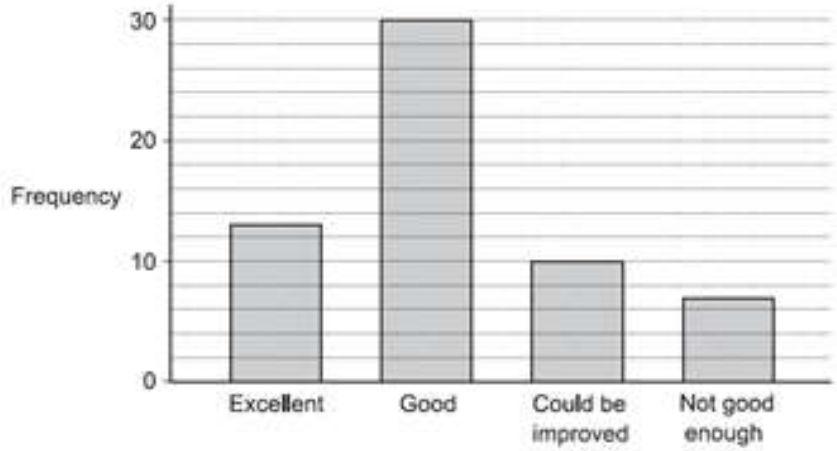
a) Account ..... by ..... p [5]

(b) Explain why he might not want to use Account A.

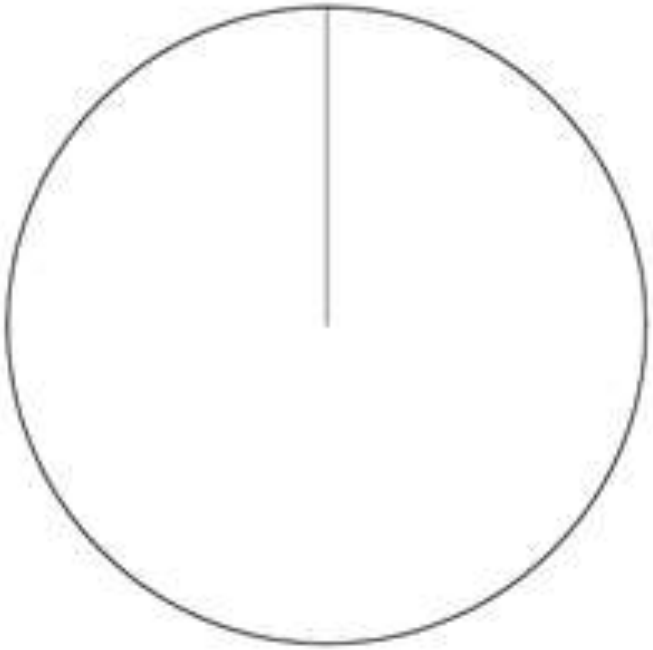
[1]

Q13. Cambury Council asked 60 customers what they thought of the local leisure centre.

The results are shown in this bar chart.



Draw and label a pie chart to represent this data.



[5]

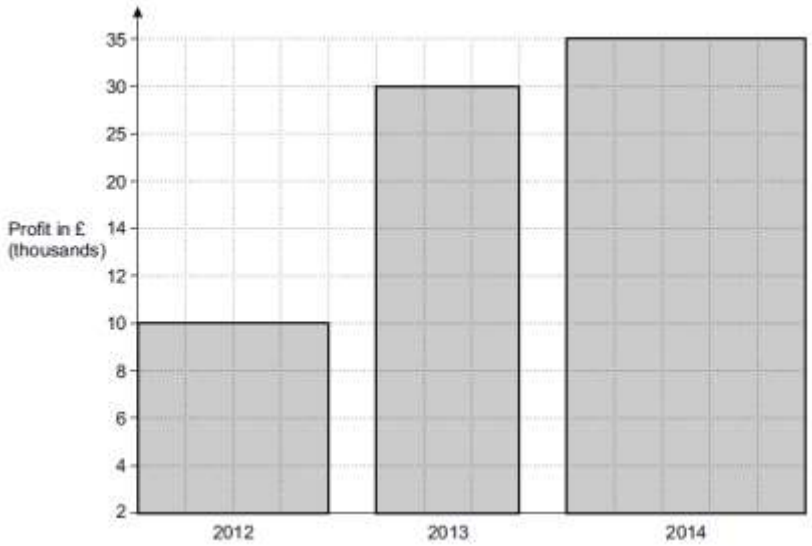
Q14. Jo went for a bike ride one evening.

She travelled x kilometres in 5 hours.

Show that her average speed can be written as m/s.

[4]

Q15. This chart shows a firm's profit for each of 3 years.



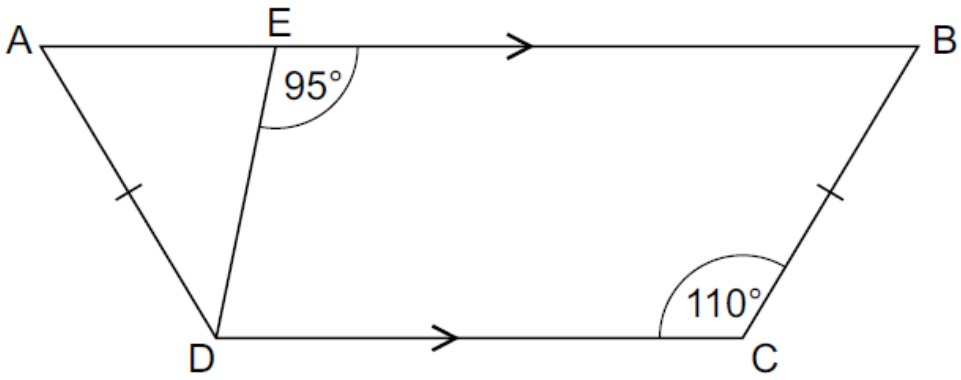
Give two reasons why the chart is misleading.

Reason 1

Reason 2

[2]

Q16. ABCD is a trapezium.



Work out

(a) angle EBC,

(a) ..... °

[1]

(b) angle ADE.

(b) ..... °

[2]

Q17. Amin is attempting to solve the following equation.

$$(x + 1)(x + 4) = (x - 2)(x - 3)$$

His incorrect solution is shown below.

	$(x+1)(x+4)=(x-2)(x-3)$
Step 1	$x^2+4x+x+4=x^2-3x-2x+6$
Step 2	$x^2+5x+4=x^2-x+6$
Step 3	$5x+4=-x+6$
Step 4	$6x+4=6$
Step 5	$6x=2$
Step 6	$x=\frac{1}{3}$

(a) Identify the step in which Amin made his first error and explain why this step is incorrect.

[2]

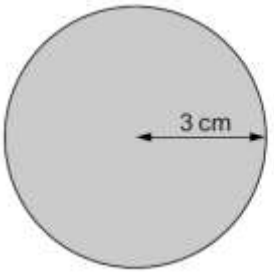
(b) Write out a correct solution to the equation.

[2]

Q18. This is a circle with radius 3 cm.

Work out the area of the circle.

Give your answer in terms of π.



..... cm^2 [2]

Q19. ABCH is a square.

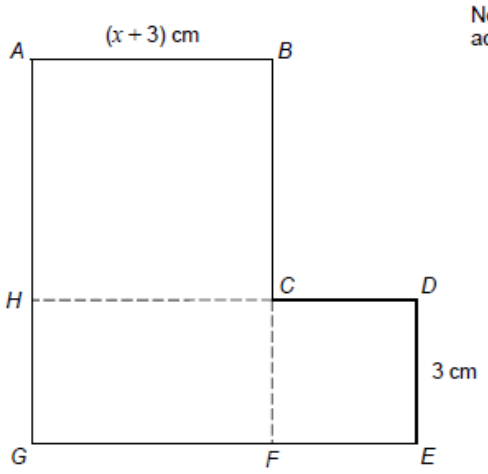
HCFG is a rectangle.

CDEF is a square.

They are joined to make an L-shape.

Show that the total area of the L-shape, in cm^2,

is $x^2 + 9x + 27$



[4]

Q20. Use numbers from this box to complete the statements.

0	1	$\sqrt{2}$	$\sqrt{3}$
$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{3}}$	$\frac{\sqrt{3}}{2}$

(i) tan 45° = ... [1]

(ii) cos 30° = ... [1]

Q21. Insert < , > or = to make each statement true.

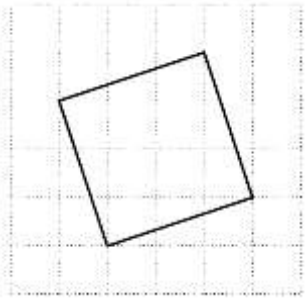
(i) $\frac{3}{5}$ ..... 0.47 [1]

(ii) 0.38 ..... $\frac{19}{50}$ [1]

(iii) $\frac{3}{16}$ ..... $\frac{1}{4}$ [1]

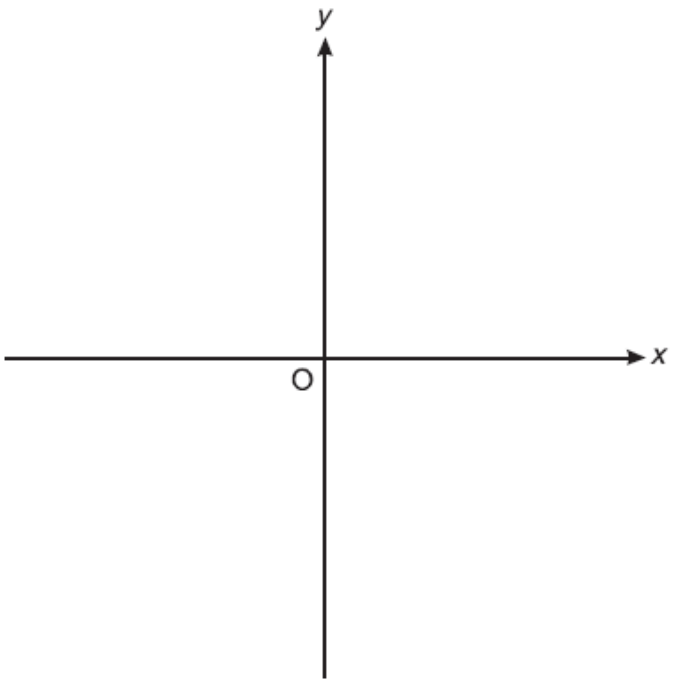
Q22. This square is drawn on a one-centimetre square grid.

Work out the area of the square.



..... cm^2 [3]

Q23. Sketch a graph on the axes below that shows $y = x^3$.

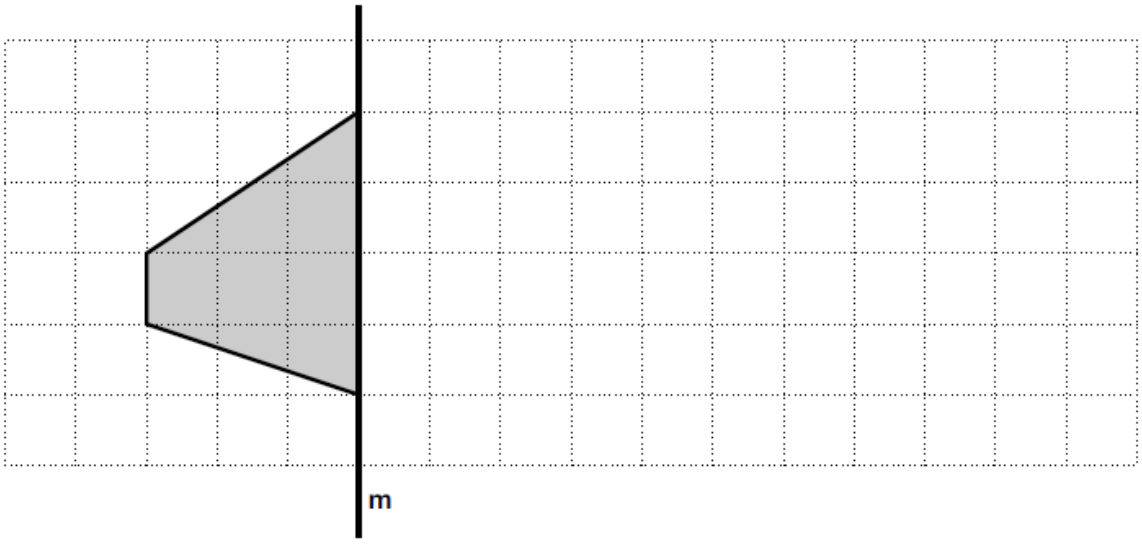


[2]

Q24. Show that $4(a + 3) - 3(a - 2) = a + 18$.

[2]

Q25. Reflect the shape in the line m.



[1]

Q26. Solve. $4x + 3y = 5$

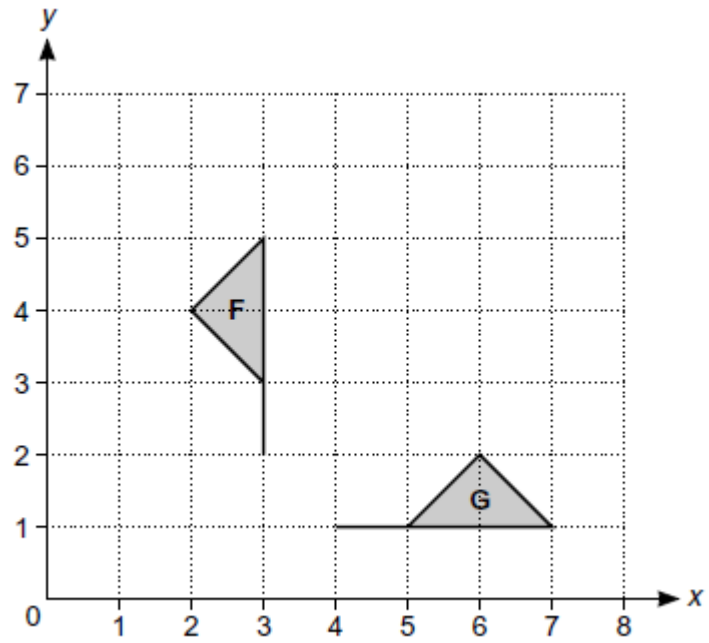
$2x + 3y = 1$

[3]

Q27. Here are two flags.

Flag F is rotated onto Flag G.

Describe the rotation fully.



[2]

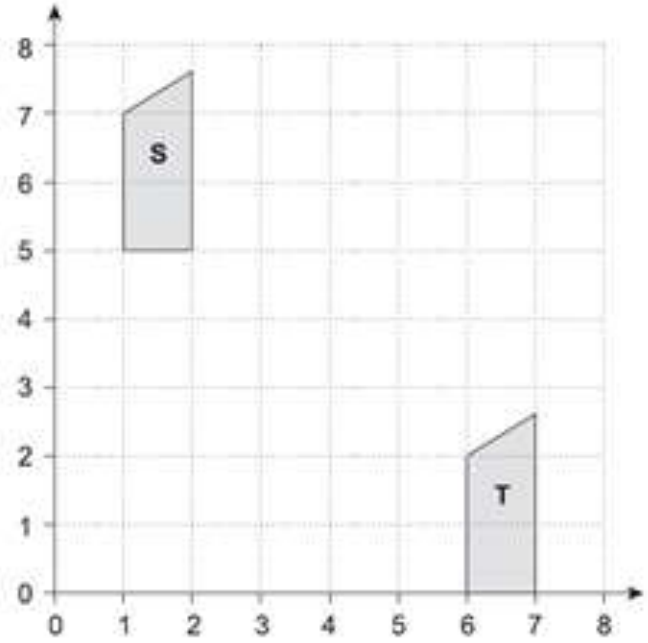
Q28. Solve. $3x^2 = 75$

x = ... [2]

Q29. Here is a coordinate grid.

Shape S is translated to Shape T using vector $\begin{pmatrix} p \\ q \end{pmatrix}$.

Write down the values of p and q.



p = ...

q = ...

[2]

Q30. Find the value of a − b when a = 3 and b = -2.

..... [1]

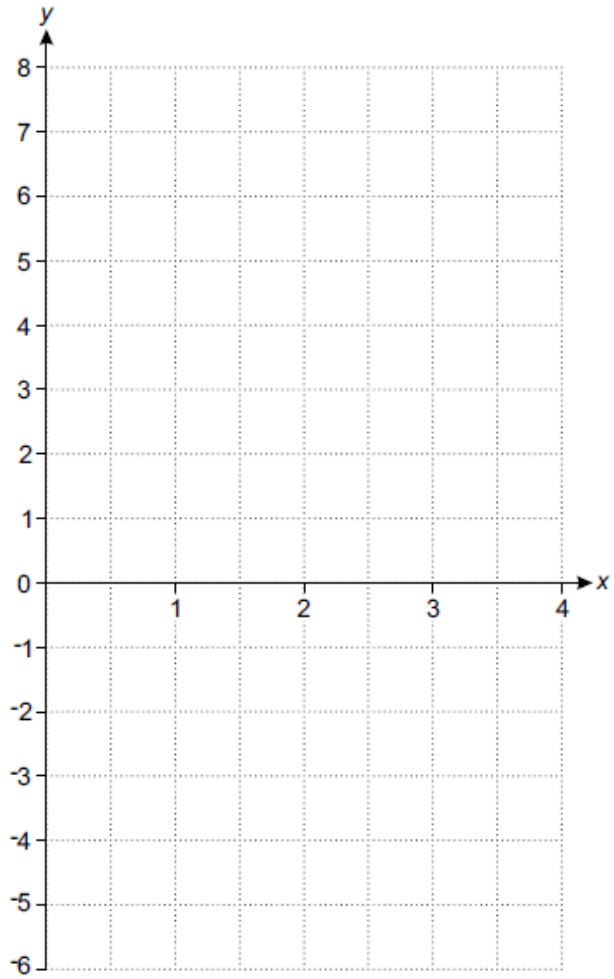
Q31. (a) Complete this table for y = 2x – 3.

x	0	1	2	3	4
y	-3		1		5

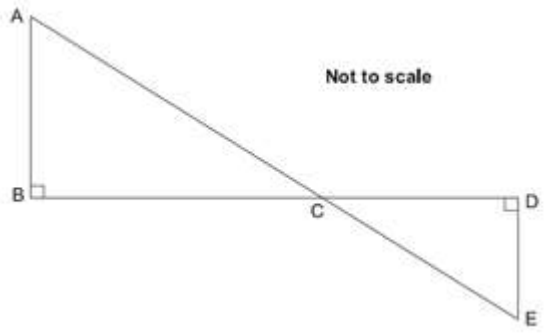
[1]

(b) On the grid below, draw the graph of y = 2x – 3 for values of x from 0 to 4.

[2]



Q32. In the diagram below, AE and BD are straight lines.



(a) Show that triangles ABC and EDC are similar.

[3]

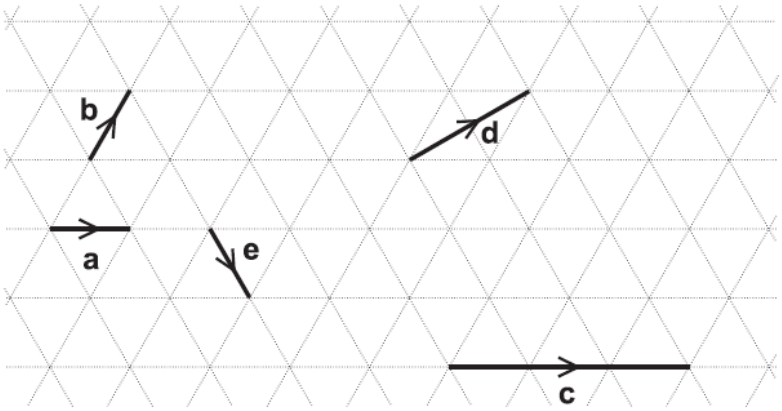
(b) The length DE is 3.5 m.

The ratio BC : CD = 3 : 1.

Find the length AB.

..... m [2]

Q33. Vectors a, b, c, d and e are drawn on an isometric grid.



Write each of the vectors c, d and e in terms of a and/or b.

c = ...

d = ...

e = ...[3]

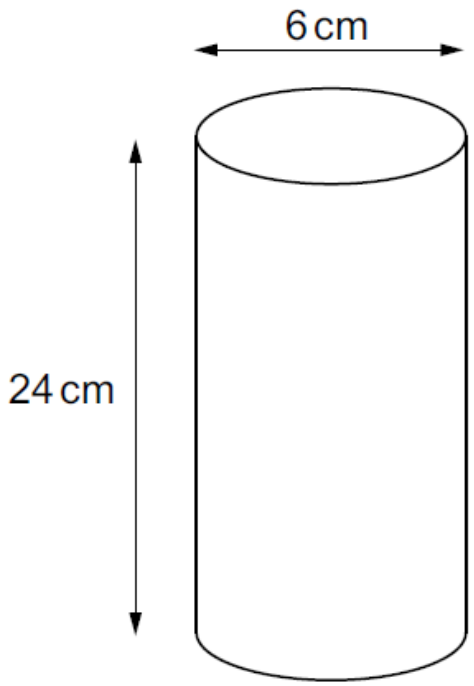
Q34. Four solid balls are packed in a cylindrical container.

The diameter of each ball is 6 cm.

The cylinder has diameter 6 cm and height 24 cm.

Calculate the volume of unused space in the cylinder.

(The volume V of a sphere is $V = \frac{4}{3}\pi r^3$)



..... cm^3 [6]