Year 10 Maths Revision: Spring Term

For your Autumn Term assessment, you will be doing two GCSE papers:

- Paper 1 (80 marks, 1.5 hours): non-calculator
- Paper 2 (80 marks, 1.5 hours): calculator

The papers can include any topic you have learnt since the beginning of year 7, so plan your revision carefully. They will also include topics you haven't studied yet, as they are full GCSE papers – be prepared to skip questions you don't understand.

Unlike other subjects, topics can come up on any paper – both papers are general. In your final GCSE (and at the end of year 10) you will sit three papers: one non-calculator and two calculator papers.

In addition to specific revision given to you by your teacher you should do the following:

1. Complete the practice papers you are given; do a few pages a day.
2. Identify questions that you recognise (you think you've been taught them) but aren't confident to answer.
3. Search for the topic on Hegarty Maths or in your revision guide. Watch the video or read the explanation, do the questions that go with this, then then try the questions from the paper again.
4. Revise any other topics you are not confident on, using Hegarty Maths or your revision guide. Focus in particular on topics you have been taught in year 9 or 10. It's important that your revision always includes answering questions.

Below is a list of topics you will have covered in year 10 by the time of your assessment (if you are in set 1 or 2 you will also have studied additional topics). Make sure you have revised any of the topics below that you are not confident about.

- Ordering decimal numbers
- Rounding to decimal places and significant figures; estimation
- Fractions and four operations (+, -,×,÷)
- Fractions, decimals and percentages
- Calculating percentages, simple interest, and repeated percentage change (e.g. compound interest)
- Standard form and four operations (+, -,×,÷)
- Laws of indices
- Linear and quadratic sequences
- Ratio
- Pythagoras Theorem
- Similarity & enlargement
- Bearings
- Trigonometry
- Algebra: simplifying, expanding, solving, substitution and graphs
- Angles: angle rules, angles in parallel lines, angles in polygons
- Vectors

GCSE Mathematics

Practice Tests: Set 2

Paper 1F (Non-calculator)

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators must not be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Change 7800 grams into kilograms.

……kilograms

(Total 1 mark)

---

2. Write 0.07 as a percentage

……%

(Total 1 mark)

---

3. Write 7.8365 correct to 2 decimal places.

……

(Total 1 mark)

---

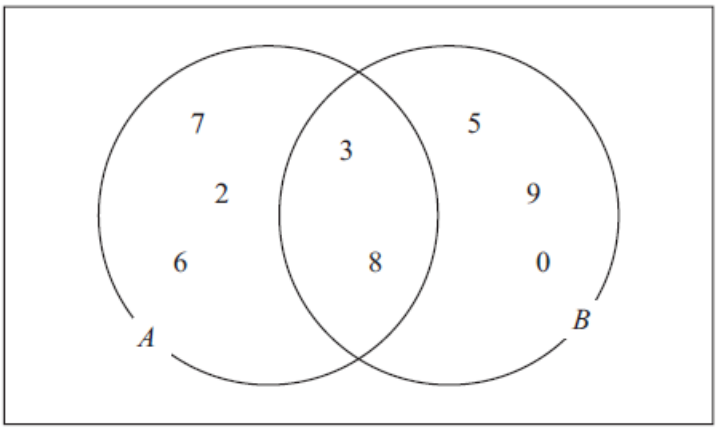
4. Work out $(-5)^2$

……

(Total 1 mark)

---

5. Here is a Venn diagram.



(a) Write down all the numbers in set A.

.....

(2)

(b) Write down the numbers that are in set $A \cap B$.

.....

(1)

(Total 3 marks)

6. Here are four digits.

8 2 4 3

(*a*) (i) Use two of these digits to make the smallest possible two-digit number.

.....

(ii) Use three of these digits to make the three-digit number closest to 300.

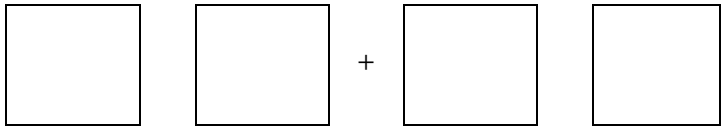
.....

(2)

Here are four different digits.

5 1 7 9

(*b*) (i) Put one digit in each box to make the largest total.
You may only use each digit once.



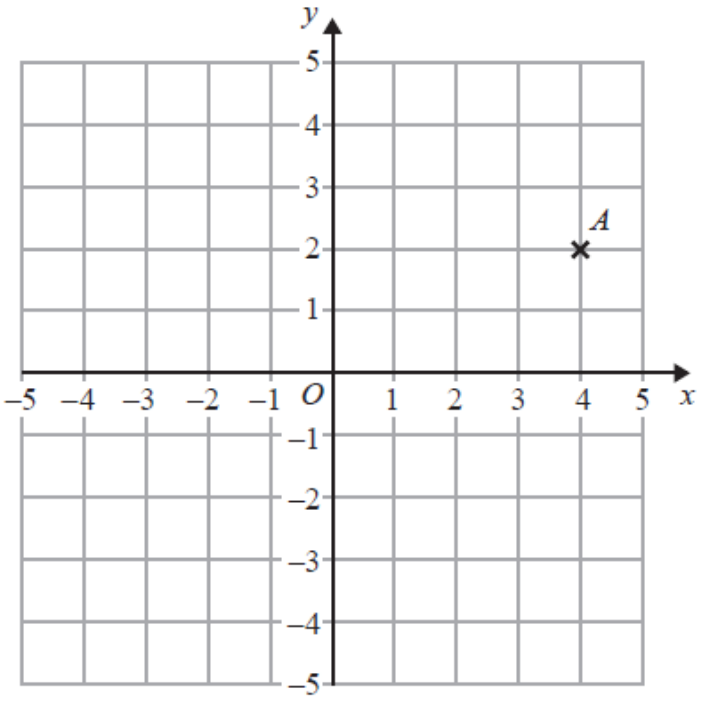
(ii) Write down the total.

.....

(2)

(Total 4 marks)

7.



(a) Write down the coordinates of point *A*.

(..... , ...)

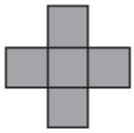
(1)

(b) On the grid, mark with a cross (×) the point (–3, 0).
Label this point *B*.

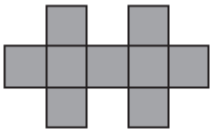
(1)

(Total 2 marks)

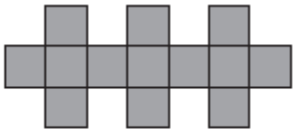
8. Here are some patterns made from squares.



Pattern number 1

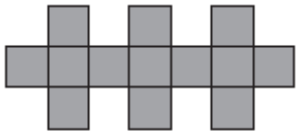


Pattern number 2



Pattern number 3

(a) The diagram below shows part of Pattern number 4
Complete the diagram for Pattern number 4



Pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of squares	5	9	13		

(1)

(c) Find the number of squares used for Pattern number 10

.....

(1)

(Total 3 marks)

---

9. Two numbers are added together.
The answer is 15

Both the numbers are factors of 24

What are the two numbers?

..... and .....

(Total 2 marks)

10. Make an accurate drawing of an equilateral triangle of side length 5 cm.

(Total 2 marks)

11. Here are three calculations.

The sum of 14 and 19	The difference between 57 and 29
The product of 9 and 4	

Which of these calculations has the biggest answer?
You must show how you got your answer.

(Total 3 marks)

12. Here is a bus timetable from a Park and Ride car park to a town centre.

Car park	Town centre
0740	0752
0800	0812
0815	0827
then every 15 minutes until	
1815	1827

Sadia gets to the car park at 0745.
She catches the next bus to the town centre.

(*a*) What time should the bus get to the town centre?

.....

(1)

Here is the bus timetable from the town centre to the car park.

Town centre	Car park
0803	0815
0835	0847
0902	0914
0920	0932
then every 15 minutes until	
1920	1932

(*b*) How many buses go from the town centre to the car park between 0800 and 1000?

.....

(2)

Paul wants to leave the town centre after 1730.
He is going to catch a bus to the car park.

(*c*) What is the time of the first bus Paul can catch from the town centre after 1730?

.....

(1)

(Total 4 marks)

13. A charity made an appeal for money.

The charity put the information shown below on a poster.

Hunger appeal

- £3 will buy 5 meals for one person.
- £100 will buy lunches for 80 school children for 5 days.

£3 will buy 5 meals for one person.

(*a*) Work out the cost of one of the meals.
Give your answer in pence.

..... p

(2)

£100 will buy lunches for 80 school children for 5 days.

(*b*) Work out the cost of buying lunch for one school child for one day.

.....

(3)

(Total 5 marks)

14.

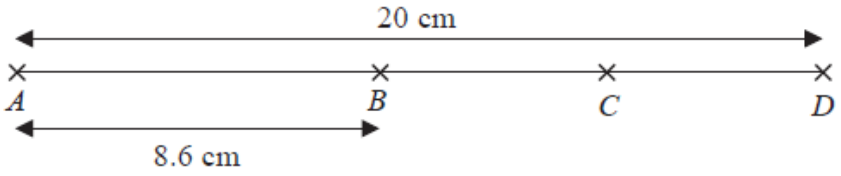


Diagram **NOT** accurately drawn

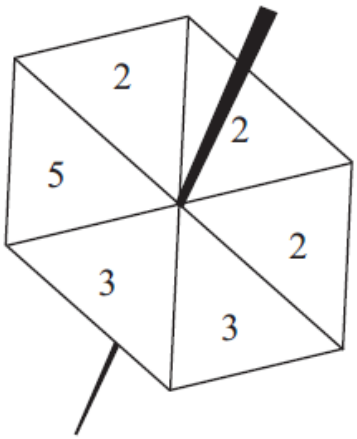
A, *B*, *C* and *D* are points on a straight line.
AD = 20 cm
AB = 8.6 cm
BC = *CD*

Work out the length of *BC*.

..... cm

(Total 3 marks)

15. Meela has a fair 6-sided spinner.
The sides of the spinner are numbered 2, 2, 2, 3, 3, 5.



Meela spins the spinner once.

(*a*) Which number is the spinner **least** likely to land on?

.....

(1)

(*b*) From the following list, choose the word that best describes the likelihood that the spinner will land on 2.

impossible unlikely evens likely certain

.....

(1)

(*c*) Write down the probability that the spinner will land on 3.

.....

(2)

(Total 4 marks)

16. Tom is going to buy 25 plants to make a hedge.

Here is information about the cost of buying the plants.

Kirsty's Plants	**Hedge World**
£2.39 each	Pack of 25 £52.50 plus VAT at 20%

Tom wants to buy the 25 plants as cheaply as possible.

Should Tom buy the plants from Kirsty's Plants or from Hedge World?
You must show all your working.

(Total 5 marks)

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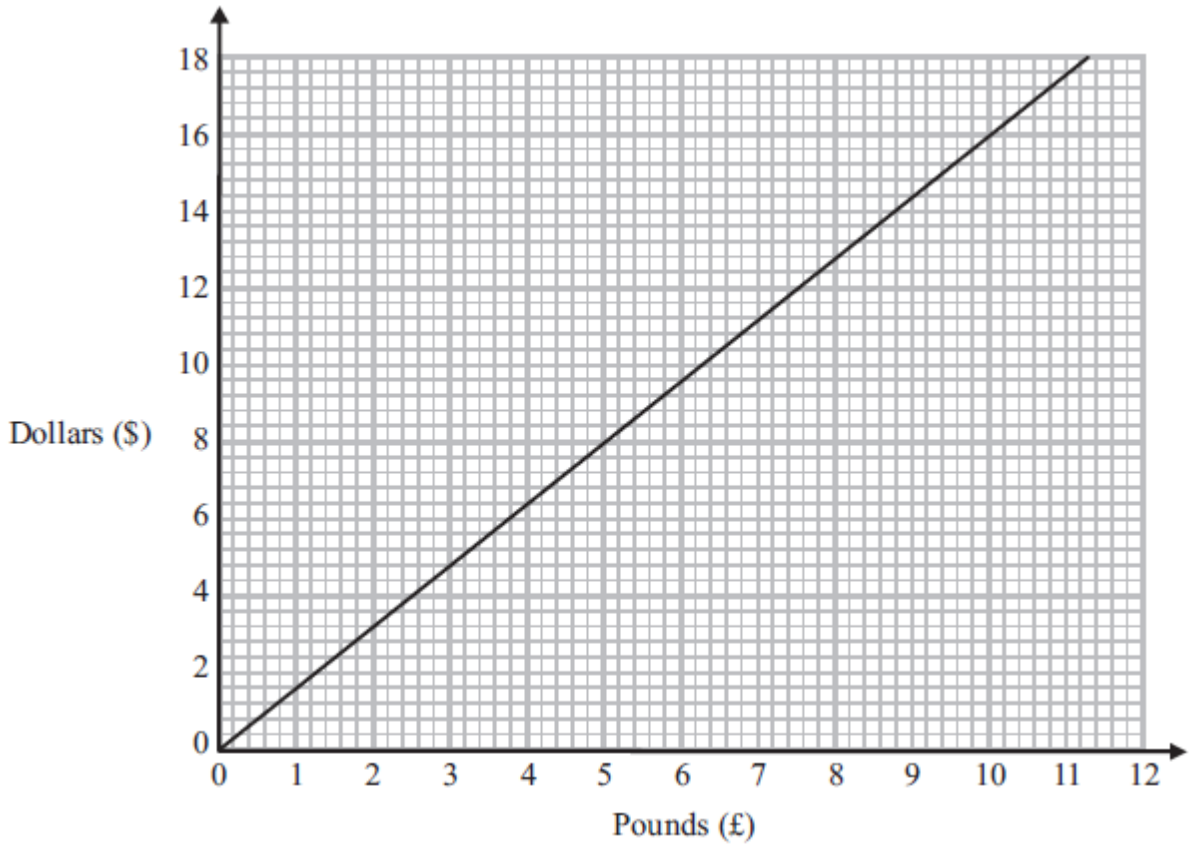
17. You can use this conversion graph to change between pounds (£) and dollars ($).



(a) Use the conversion graph to change £5 to dollars.

$ .....

(1)

Ella has $200 and £800
Her hotel bill is $600

Ella pays the bill with the $200 and some of the pounds.

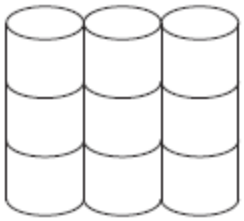
(b) Use the conversion graph to work out how many pounds she has left.

£ .....

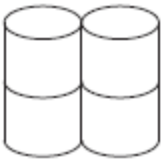
(4)

(Total 5 marks)

18.



Pack of 9 toilet rolls £4.23



Pack of 4 toilet rolls £1.96

A pack of 9 toilet rolls costs £4.23

A pack of 4 toilet rolls costs £1.96

Which pack gives the better value for money?

You must show all your working.

.....

(Total 3 marks)

19. Dylan is driving from London to Newcastle.
He will drive a total distance of 240 miles.

Dylan leaves London at 09:30

It takes him $1\frac{1}{2}$ hours to travel the first 90 miles.

(a) Use this information to estimate the time Dylan will arrive in Newcastle.
You must show how you get your answer.

.....

(3)

(b) Write down **one** assumption you made in your answer to part (a).
If your assumption is wrong, how would this affect your answer to part (a)?

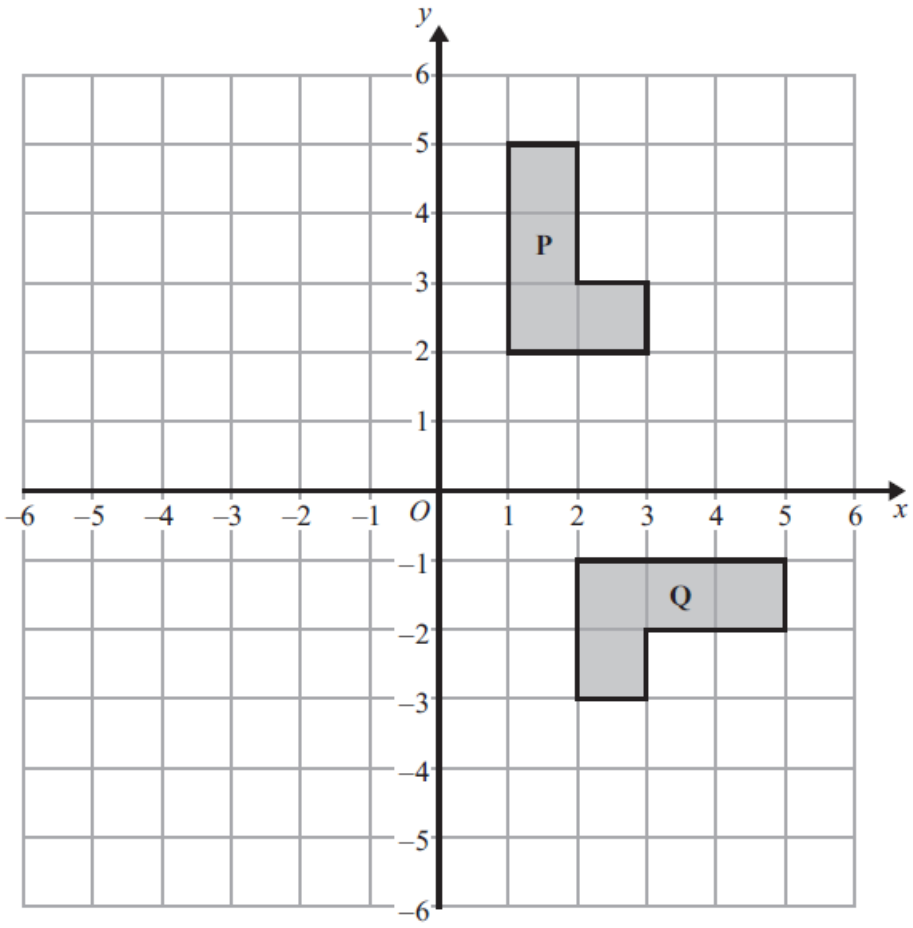
……...……..

..……

(1)

(Total 4 marks)

20.



Describe fully the **single** transformation that maps shape **P** onto shape **Q**.

.....

.....

(Total 3 marks)

21.

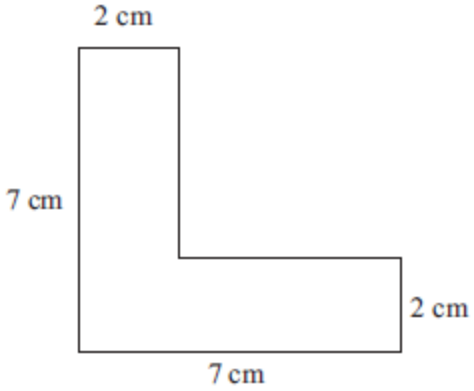


Diagram **NOT** accurately drawn

The diagram shows the cross-section of a solid prism.
The length of the prism is 2 m.

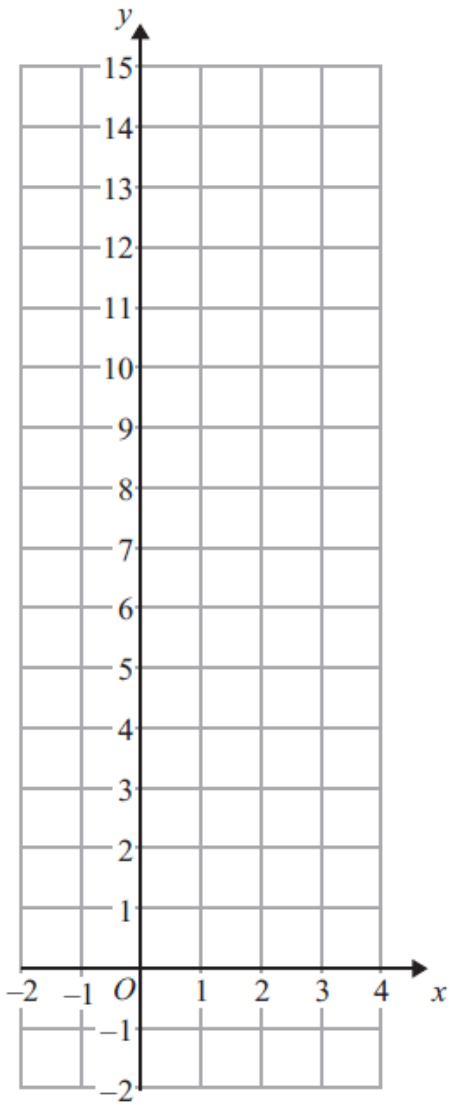
The prism is made from metal.
The density of the metal is 8 grams per cm^3.

Work out the mass of the prism.

.....

(Total 5 marks)

22.



(a) On the grid, draw the graph of $y = 3x + 5$ for values of x from –2 to 3

(3)

(b) Explain why the point (6, 24) does **not** lie on the line $y = 3x + 5$

(2)

(Total 5 marks)

23. Ramesh throws a biased coin.
The probability that the coin will land on a Head is 0.37

(a) Write down the probability that the coin will land on a Tail.

.....

(1)

Ramesh is going to throw the coin 500 times.

(b) Work out an estimate for the number of times that the coin will land on a Head.

.....

(2)

(Total 3 marks)

---

24. Arwen buys a car for £4000
The value of the car depreciates by 10% each year.

Work out the value of the car after two years.

£ .....

(Total 3 marks)

---

25. Write the following numbers in order of size.
Start with the smallest number.

0.038×10^{2} 3800×10^{-4} 380 0.38×10^{-1}

.....

(Total 2 marks)

---

26. There are 18 packets of sweets and 12 boxes of sweets in a carton.

The mean number of sweets in all the 30 packets and boxes is 14.
The mean number of sweets in the 18 packets is 10.

Work out the mean number of sweets in the boxes.

.....

(Total 3 marks)

TOTAL FOR PAPER IS 80 MARKS

GCSE Mathematics

Practice Tests: Set 2

Paper 2F (Calculator)

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Write 0.013 as a fraction.

.....

(Total 1 mark)

---

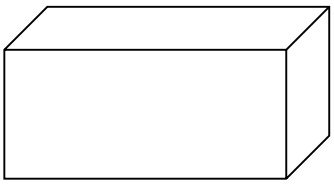
2. Change 6.4 centimetres into millimetres

.....

(Total 1 mark)

---

3. Here is a cuboid.



How many vertices does the cuboid have?

.....

(Total 1 mark)

---

4. Find the value of 7^4

……

(Total 1 mark)

---

5. Here are some patterns made from triangles.

Pattern number 1 | Pattern number 2 | Pattern number 3 | Pattern number 4

(a) Complete the table.

Pattern number	1	2	3	4	5
Number of triangles	2	4	6		

(1)

(b) How many triangles are needed for Pattern number 12?

.....

(1)

Luke says that Pattern number 40 has 82 triangles.

(c) Luke is wrong.
Explain why.

.....

.....

(1)

(Total 3 marks)

6. Janet sends parcels by Parcel Express.
The table shows information about the cost of sending a parcel by Parcel Express.

Parcel Express	
Weight range	**Cost**
Less than 2 kg	£3.80
2 kg to less than 5 kg	£5.99
5 kg to 10 kg	£71.4

The table below gives information about the numbers and weights of the parcels Janet sent in April and in May.

Number of parcels		
Weight range	**April**	**May**
Less than 2 kg	23	21
2 kg to less than 5 kg	28	27
5 kg to 10 kg	19	32

Janet could have sent her parcels by Parcels R Go.
The table below shows information about the cost of sending a parcel by Parcels R Go.

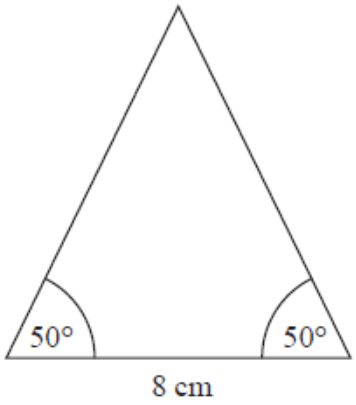
Parcels R Go	
Weight range	**Cost**
0–15 kg	£5.99

Janet thinks that it would have been cheaper to send all her parcels by Parcels R Go.

Is Janet right?
You must show your working.

(Total 5 marks)

7. Here is a sketch of the end of a roof of a toy house.



Draw an accurate diagram of the end of the roof.

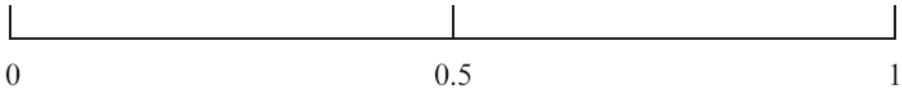
(Total 2 marks)

8. On the probability scale, mark with a cross (×), the probability that

(i) you will have something to drink tomorrow.
Label this cross **A**.

(ii) a teacher chosen at random was born on a Monday.
Label this cross **B**.

(iii) a fair 6-sided dice will show an even number when thrown.
Label this cross **C**.



(Total 3 marks)

---

9. Jason collected some information about the heights of 19 plants.
This information is shown in the stem and leaf diagram.

1	1	2	3	3		
2	3	3	5	9	9	
3	0	2	2	6	6	7
4	1	1	4	8		

Key: 4|8 means 48 mm

Find the median.

..... mm

(Total 2 marks)

---

10. Some of the land in the Netherlands is used to grow bulbs.
The table shows the percentages of this land used to grow the different types of bulbs.

Type of bulb	**Hyacinth**	**Tulip**	**Daffodil**	**Lily**	**Other**
Percentage	8%	50%	12%	x%	7%

(a) Work out the value of x.

x = ...

(1)

The area of land used to grow bulbs for hyacinths is 1200 hectares.

(b) Work out the area of land used to grow bulbs for daffodils.

.....hectares

(2)

(Total 3 marks)

11. Barbara has a tube of sweets.

There are 5 sweets in the tube.

There is one sweet of each of these colours in the tube.

red blue green yellow pink

Barbara takes two sweets at random from the tube.

(a) Write down all the possible combinations of colours she can take.

.....

.....

.....

(2)

(b) What is the probability that Barbara takes a red sweet and a yellow sweet from the tube?

.....

(1)

(Total 3 marks)

12. Ali takes his car to a garage.
The car has a 5000 mile service.
It also has an MOT test.

Costs	
5000 mile service	£79 plus VAT at 20%
10 000 mile service	£99 plus VAT at 20%
MOT test	£39 plus VAT at 20%

(a) Work out Ali's total bill.

£ .....

(3)

Ali bought his car for £20 000

The car depreciated by 20% the first year.
The car depreciated by 10% the second year.

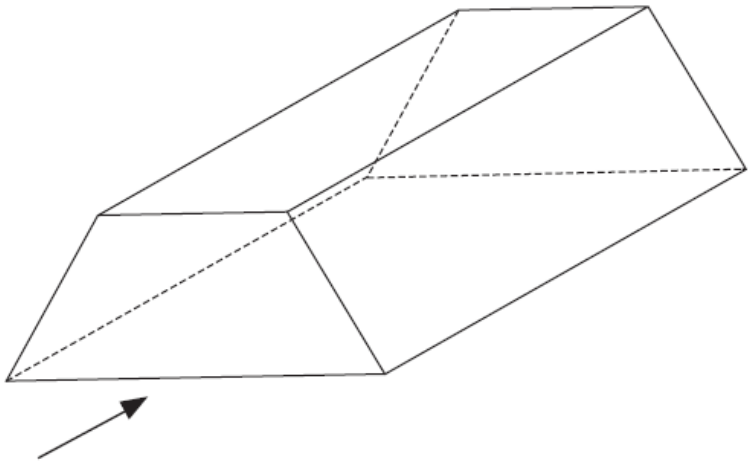
(b) Work out the value of the car at the end of the second year.

£ ....

(3)

(Total 6 marks)

13.



The diagram shows a prism.

In the space below, sketch the front elevation from the direction marked with an arrow.

(Total 2 marks)

14. Becky says,

"When you square a prime number you always get an odd number."

(a) Write down an example to show that Becky is wrong.

..…….

(1)

James says,

"When you cube any negative number you always get a negative number."

(b) James is right.
Explain why.

...……

……..

(2)

(Total 3 marks)

---

15. There are some blue counters, red counters and green counters in a bag.

There are twice as many blue counters in the bag as red counters in the bag.
There are 3 times as many red counters in the bag as green counters in the bag.

For the counters in the bag, write down the ratio of

the number of blue counters to the numbers of red counters to the number of green counters.

……..

(Total 2 marks)

---

16. Lev writes down the following

$$\frac{2}{3}+\frac{5}{8}=\frac{7}{11}$$

Without doing the exact calculation, explain why Lev's answer cannot be correct.

……..……

……

(Total 1 mark)

17.

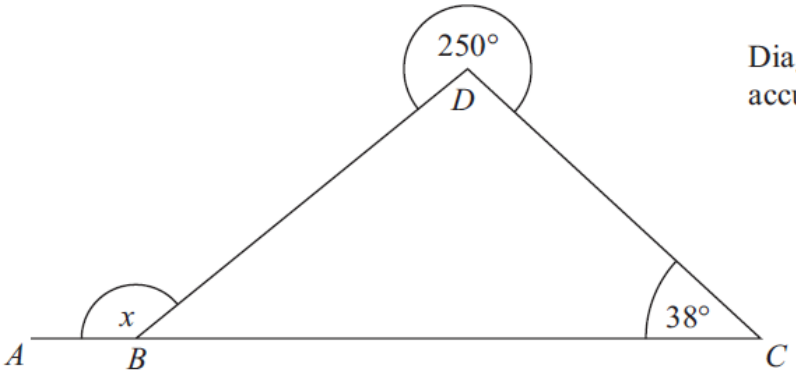


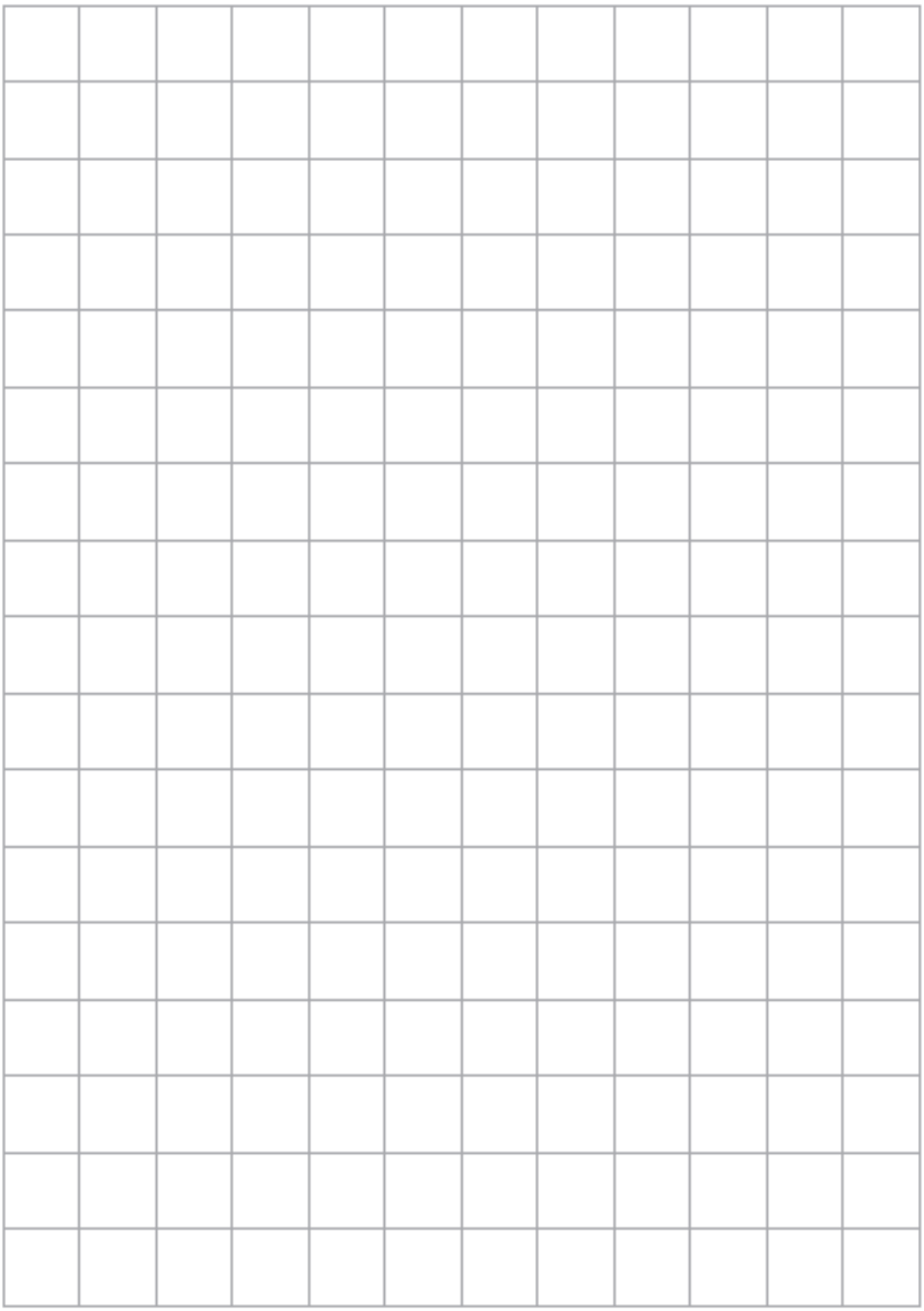
Diagram **NOT** accurately drawn

ABC is a straight line.
Angle *BCD* = 38°
The reflex angle *BCD* = 250°

Work out the size of the angle marked *x*.
Give reasons for your answer.

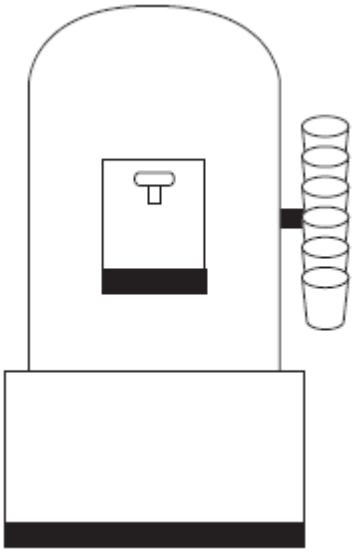
(Total 4 marks)

18. On the grid, draw the graph of $y = 2x - 3$ for values of x from -2 to 3



(Total 4 marks)

19.



A water container has 19.5 litres of water in it.
A cup holds 210 ml of water.

At most 92 cups can be filled completely from the water container.

Explain why.
You must show all your working.

(Total 3 marks)

20. The total cost of 3 apples and 4 pears is £1.84

The total cost of 5 apples and 2 pears is £1.76

Work out the cost of one apple and the cost of one pear.

Cost of one apple .....p

Cost of one pear .....p

(Total 4 marks)

21. There are a total of 120 counters in a box.

There are only red counters and blue counters in the box.
There are three times as many red counters as blue counters in the box.

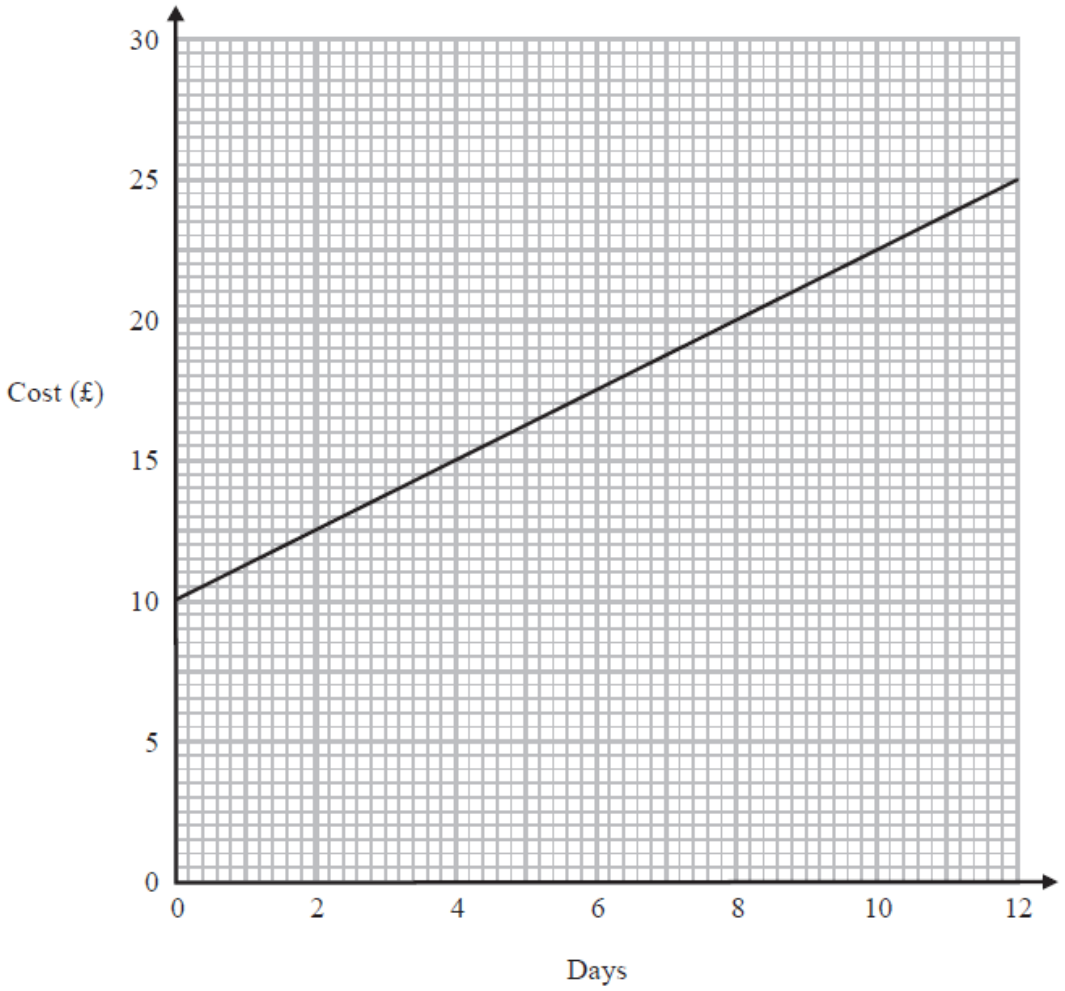
Carl takes $\frac{1}{3}$ of the red counters from the box.
Kerry takes 80% of the blue counters from the box.
Work out the ratio of the number of red counters to the number of blue counters now in the box.

Give your ratio in its simplest form.

.....

(Total 5 marks)

22. Salome hires a chainsaw from the **Saws are Us** company.
This graph shows the cost of hiring a chainsaw from **Saws are Us** for up to 12 days.



(a) Find the cost of hiring the chainsaw for 6 days from **Saws are Us**.

£ .....

(1)

The cost of hiring a chainsaw from **Saws are Us** is £10 plus a daily rate.

(b) Work out the daily rate.

£ .....

(1)

Salome wants to compare the cost of hiring a chainsaw from **Saws are Us** and from **Saws to You.**

Saws to You charge £3 for each day of hire.

Salome hires chainsaws for different periods of time.
She wants to use the cheaper company.

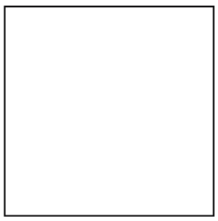
(c) Which of these two companies is the cheaper to hire the chainsaw from?
You must show your working and explain your answer.

.....

(3)

(Total 5 marks)

23. A square has sides of length 8.4 cm.



Work out the length of a diagonal of the square.
Give your answer correct to 3 significant figures.

..... cm

(Total 3 marks)

24. The diagram shows a circular pond with a path around it.

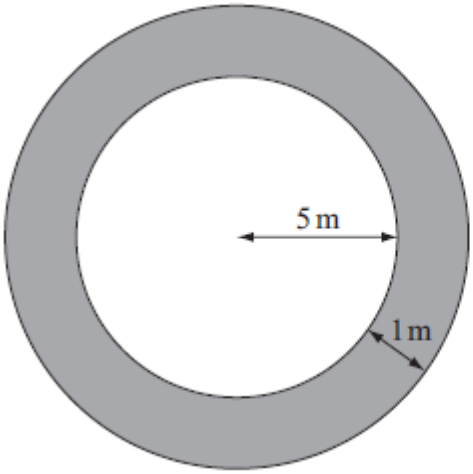


Diagram **NOT** accurately drawn

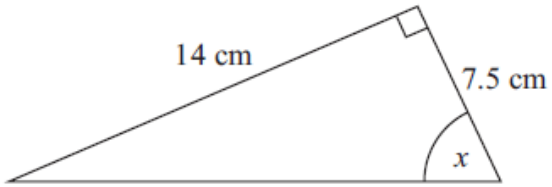
The pond has a radius of 5m.
The path has a width of 1m.

Work out the area of the path.
Give your answer correct to 3 significant figures.

..... m^2

(Total 3 marks)

25. Here is a right-angled triangle.



Work out the size of the angle marked *x*.
Give your answer to the nearest degree.

.....°

(Total 3 marks)

26. A box is on a table.

The area of the box in contact with the table is 1500 cm^2.
The pressure on the table is 28 newtons/m^2.

Work out the force exerted by the box on the table.

$$p = \frac{F}{A}$$

p = pressure

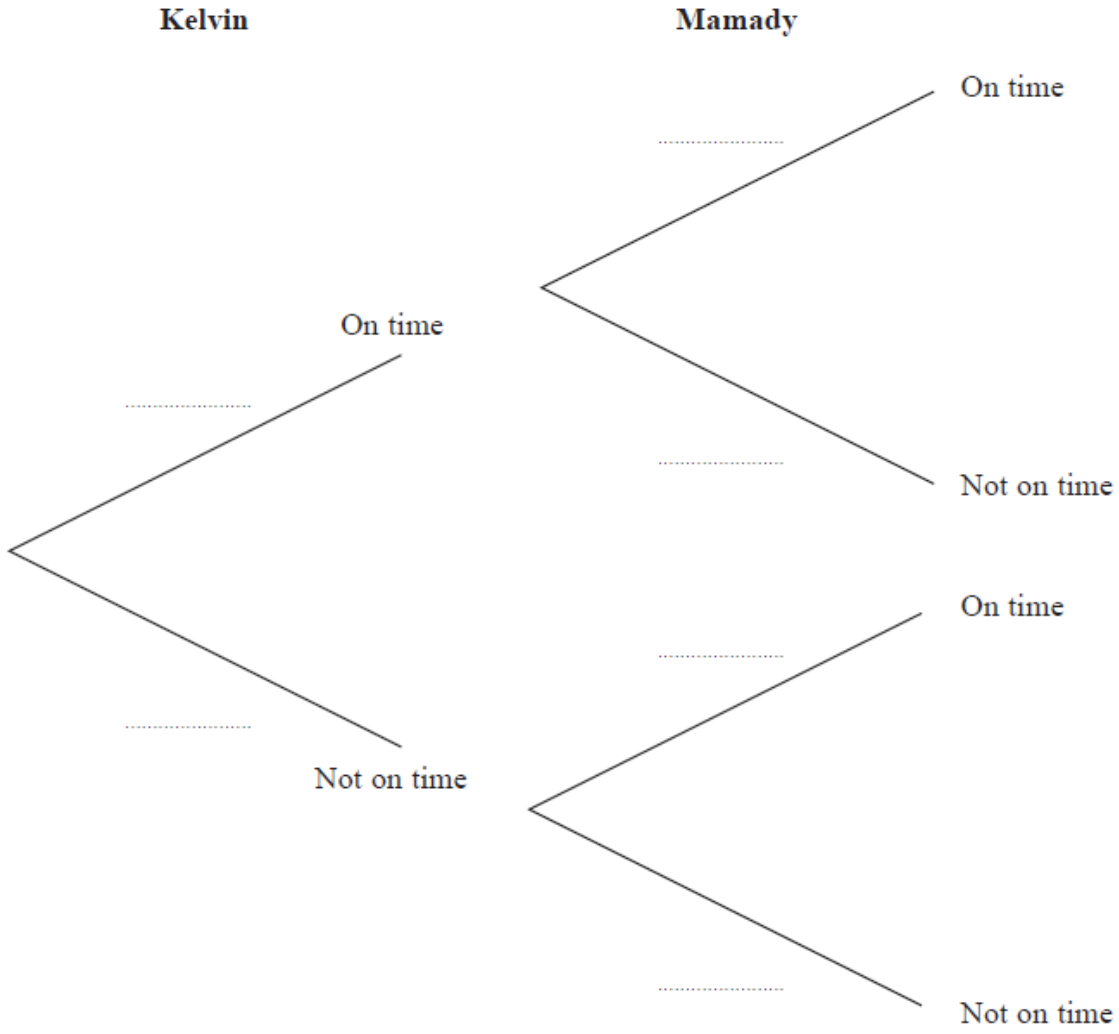
F = force

.....newtons

(Total 3 marks)

27. Kelvin and Mamady are in the same class.
The probability that Kelvin arrives on time is 0.7.
The probability that Mamady arrives on time is 0.9.

Complete the probability tree diagram.



(2)

(b) Work out the probability that Kelvin and Mamady both arrive on time.

.....

(2)

(Total 4 marks)

TOTAL FOR PAPER IS 80 MARK