## Paper 2 and Paper 3 Preparation Paper

## AQA - Foundation Very High Chance

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser
You will need a calculator

## Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings


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| Question | Topic | Video number |
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1. 



From the numbers in the rectangle,
(a) Write down a factor of 35 .
$\qquad$
(b) Write down the number which is not prime
2. Mary is organising a charity hot dog sale.

There are 18 bread rolls in each packet.
There are 15 hot dogs in each packet.
Mary buys exactly the same number of bread rolls as hot dogs.

What is the smallest number of each packet that Mary can buy?
packets of bread rolls
packets of hot dogs
3. An airplane has economy and first class seating.

There are $s$ seats in each row in economy.
There are $t$ seats in each row in first class.

There are 8 rows in first class and 18 rows in economy.
Write down an expression, in terms of $s$ and $t$, for the number of seats on the airplane.
4.


Find the size of the angle marked $x$.
$\qquad$

## 5. Shown below is a parallelogram.


(a) Find $x$
$\qquad$
(b) Find y
$\qquad$
(c) Find z
$\qquad$
6. Nigel has asked his friends which country they support in the Six Nations.

He has shown the results in a bar chart.
The bar chart is accurately drawn, but Nigel has forgotten to label the frequencies Nigel does remember that 9 people supported France.

Find the missing frequencies.


| Rugby Team | Frequency |
| :--- | :---: |
| Scotland |  |
| England |  |
| Wales |  |
| France | 9 |
| Ireland |  |
| Italy |  |

(4)
7. A square is drawn inside of a regular octagon.

(a) Write down the order of rotational symmetry of the octagon.
(b) On the diagram draw in all the lines of symmetry.
(2)
8. Below is a line graph that shows the population of a village.

(a) What was the population in 1980 ?
(b) In which year was the population 700?

The population is expected to increase by 120 by 2020.
(c) Work out the expected population in 2020.
$\qquad$
9. On a particular day, 98 adults visit a leisure centre.

Some are going to the gym.
Some are going to play tennis.
Some are going to play badminton.
The rest are going swimming.

51 people are male.
21 out of the 40 going to the gym are male.
19 males and 7 females are going swimming.
7 out of the 20 people playing badminton are male.
Twice as many females play tennis than males.
How many women play tennis?
10. The table shows the distance travelled to school by 50 students.

| Distance (miles) | Frequency |
| :---: | :---: |
| $0<d \leq 2$ | $\not 220$ |
| $2<d \leq 4$ | 1812 |
| $4<d \leq 6$ | 11 |
| $6<d \leq 8$ | 4 |
| $8<d \leq 10$ | 3 |

(a) Draw a frequency polygon to represent this data.


One student is chosen at random.
(b) Work out the probability that this student travels more than 6 miles to school.
11.
(a) Simplify $3 m-m$
(b) Simplify $y^{2}+y^{2}+y^{2}$
(c) Simplify $7 \mathrm{~h}+5 \mathrm{k}+\mathrm{h}-3 \mathrm{k}$
(2)
12.

(a) Measure the length of the line $A B$.
(b) What type of angle is $x$ ?
(c) Measure the size of angle $y$.
13.

Holly works out the answer to $135.66+193.88$ on a calculator.

Her answer is shown on the calculator.
(a) Round her answer to the nearest 10
(b) Round her answer to the nearest 100.
(c) Round her answer to the nearest integer.
(d) Round her answer to one decimal place.
14. From the list of numbers

## $\begin{array}{llllllll}7 & 9 & 12 & 21 & 23 & 30 & 36 & 45\end{array}$

(a) write down the multiples of 7 .
(b) write down the multiples of 5 .
$\qquad$
15. Write down all the prime numbers between 10 and 20.
16. The attendance at Frome United versus Trowbridge Rovers was 8,701 .

Of this crowd, five-sevenths were male.
Calculate how many people were female.
17. Joanne sees this special offer in a shop.

> | Special Offer |  |
| :---: | :---: |
| iPod |  |
| Headphones |  |
| He25 |  |
| Buy both items and receive a $4 \%$ discount |  |

Joanne buys both items.

How much does she pay?
£. $\qquad$
18. (a) Find the value of $5(a+c)$ when $a=4$ and $c=9$.
(b) Find the value of $7 x+2 y$ when $x=2$ and $y=-9$.
19. The table shows the time spent revising and the test scores of ten students.

| Time spent revising (hours) | 9 | 0.5 | 1 | 4 | 6 | 2 | 3 | 7 | 5 | 8 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Test result (\%) | 90 | 20 | 38 | 62 | 68 | 32 | 46 | 70 | 60 | 86 |

The first seven points have been plotted on this scatter diagram.

(a) Complete the scatter diagram.
(b) Describe the relationship shown in the scatter diagram.
$\qquad$
$\qquad$
(c) Draw a line of best fit on your scatter diagram.
(d) Another student has spent 4.5 hours revising. Use your line of best fit to estimate their test result.
20. The pictogram shows the amount of money raised by students in some tutor groups at a school.

Key $\bigcirc=£ 10$

| Tutor group |  | Raised |
| :---: | :---: | :---: |
| $S$ |  | E45 |
| $\mathbf{E}$ |  |  |
| $P$ |  |  |

(a) Complete the raised column.
(b) Complete the pictogram for tutor group E .
(c) How much money was raised altogether?
21. 62 people took part in a talent show 39 of the people were women.
11 people made it through to the final and the rest were eliminated. 5 men made it through to the final

a) Complete the frequency tree
b) What fraction of the men made it through to the final?
22. Shown is a regular hexagon and a regular octagon.


Calculate the size of angle $y$.

$$
\begin{equation*}
y= \tag{}
\end{equation*}
$$

23. 



Triangles ABD and BCD are both isosceles.
$A C$ is a straight line.
Is ADC a right angle?
Clearly explain your answer.
24. The distance from Leek to Milton is 310 miles.

A train travels this distance in 4 hours 15 minutes.
Calculate the average speed of the train.
.mph
25. $\xi=\{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16\}$
$A=$ multiples of 3
$B=$ multiples of 5
(a) Complete the Venn diagram

(3)

One of the numbers is selected at random.
(b) Write down $P(A \cap B)$
26. James goes to an arcade.

He has one go on the Teddy Grabber.
He has one go on the Penny Drop.
The probability that he wins on the Teddy Grabber is 0.2 .
The probability that he wins on the Penny Drop is 0.3 .
(a) Complete the tree diagram.

Teddy Grabber
Penny Drop

(2)
(b) Work out the probability that James wins on the Teddy Grabber and he also wins on the Penny Drop.
27. Sophie went to Spain.

She changed £225 into euros (€).
The exchange rate was $£ 1=€ 1.62$
(a) Change £225 into euros (€).
$\qquad$
(2)

On her return to England, Sophie changed €66 into pounds (£)

The new exchange rate was $£ 1=€ 1.50$
(b) Change €66 into pounds (£).

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29. Lauren is given a $12 \%$ pay rise.

Her new salary is $£ 24,080$
What was Lauren's salary before the pay rise?
30. Expand and simplify $(w-3)(w-8)$
31. Solve $4 y+1=6 y+26$

$$
y=
$$

32. Work out the $n$th term for this sequence

## $\begin{array}{lllll}8 & 17 & 26 & 35 & 44\end{array}$

33. Factorise

## $15 y+20$

34. Factorise $x^{2}+2 x-24$
35. A straight line $L$ is shown on the grid.


Work out the equation of line $L$
36.

(a) Convert £50 into Dirhams.
(b) Convert 175 Dirhams into Pounds (£).
$£$ $\qquad$

Tom wants to buy a camera.
In London the camera costs $£ 380$.
In Abu Dhabi the camera costs 2000 Dirhams.

In which city is the camera cheaper and by how much?
Give your answer in pounds.

City:
$£$ $\qquad$
37. Factorise $x^{2}-64$
38. A radioactive substance decays over time.

Every year its mass decreases by $14 \%$.
How many years will it take for 500 kg of the substance to decay to a mass less than 200kg?
39.

$A B$ is parallel to $C D$.
(a) Work out the size of the angle marked $x$.
$\qquad$
.0
Give a reason for your answer.
$\qquad$
$\qquad$
(b) Work out the size of the angle marked $y$.
40. Use ruler and compasses to construct the perpendicular bisector of $A B$. You must show clearly all your construction arcs.

A
.
B
(2)
41. The diagram shows two lighthouses.

A boat is within than 8 miles of lighthouse A.
The same boat is within 6 miles of lighthouse $B$.
Shade the possible area in which the boat could be.

$$
1 \mathrm{~cm}=1 \mathrm{mile}
$$

A

Sea
42. Shown below is a trapezoid prism.


Find the volume of the prism.
43. A primary school has a running track.

It has two straights of 50 metres.
Also there are two 'bends' that are semicircles with diameter 30 metres.


Work out the distance around the running track.
44. The diagram shows a rectangle with a circle cut out.

## Not drawn to scale

## 20 cm



The rectangle has length 20 cm and width 11 cm .
The circle has diameter 8 cm .

Work out the shaded area.
Give your answer correct to 2 decimal places.
. $\mathrm{cm}^{2}$
(4)
45. Below is a cylinder with radius 2 cm and height 5 cm .


Calculate the volume of the cylinder.
$\mathrm{cm}^{3}$
46. Triangle $A B C$ has a right angle.

Angle BAC is $25^{\circ}$
$A C=12.5 \mathrm{~cm}$


Calculate the length of $A B$
47. Solve the simultaneous equations

$$
\begin{aligned}
& 2 x+4 y=26 \\
& 3 x-y=4
\end{aligned}
$$

Do not use trial and improvement

$$
\text { x = .......................... y }=
$$

48. Make $w$ the subject of the formula

$$
y=3 w-a
$$

49. 



The diagram shows a rectangle. The sides are measured in centimetres.
(a) Explain why $5 x+3=3 x+9$
$\qquad$
$\qquad$
(b) Solve $5 x+3=3 x+9$
X =.
(c) Calculate the perimeter of the rectangle.
50.


The lines $A$ and $B$ are parallel.

The line A passes through the point $(0,8)$
The line $B$ has equation $y=3 x+4$

Write down the equation of line $A$
51. The table gives information about students staying after school to play sport.

| Sport | Frequency |
| :---: | :---: |
| Netball | 15 |
| Hockey | 10 |
| Rugby | 26 |
| Football | 9 |

Draw an accurate pie chart to show this information.

(4)
52.


10 cm

Shown is a right-angled triangle.
Work out the perimeter of the triangle
53. A mobile phone mast has a range of 3 km .


Calculate the area of the shaded region.
Give your answer to 2 decimal places.
54. This is a map of an island.


A helicopter flies in a straight line from Leek to Donhampton.
(a) How far does the helicopter fly?
$\qquad$ miles
(b) Write down the bearing of Donhampton from Leek.
$\qquad$

