OCR

Oxford Cambridge and RSA

Mock Test Papers - Paper3 - Test2

Paper 3 (Foundation Tier)

Time allowed: 1 hour 30 minutes

F

You must have:
- the Formulae Sheet for Foundation Tier (inside this document)

You can use:
- a scientific or graphical calculator
- geometrical instruments
- tracing paper

Please write clearly in black ink. Do not write in the barcodes.

Centre number ☐☐☐☐☐ Candidate number ☐☐☐☐

First name(s) _____

Last name _____

INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.

- Answer all the questions.
- Where appropriate, your answer should be supported with working.
Marks might be given for using a correct method, even if your answer is wrong.

- Use the π button on your calculator or take π to be 3.142 unless the question says something different.

INFORMATION

- The total mark for this paper is **100**.
- The marks for each question are shown in brackets [ ].
This document has 24 pages.

ADVICE

- Read each question carefully before you start your answer.

Answer all the questions.

1   (a) Write down a factor of 36.

(a) .... [1]

(b) Write down a square number between 20 and 40.

(b) .... [1]

(c) Write $\frac{1}{8}$ as a decimal.

(c) .... [1]

(d) Find the two numbers which multiply together to make 30 and add together to make 11.

(d) .... and .... [2]

2   (a)   Here is a shape.
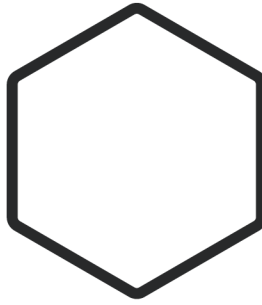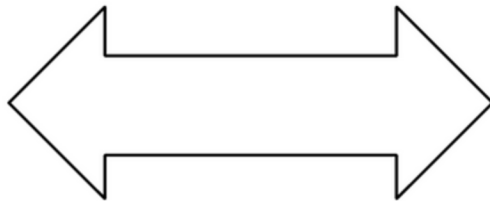

On the diagram, draw the shape's three lines of symmetry.   [1]

(b)   Here is a 2D shape.

On the diagram, draw all of the shape's lines of symmetry.

[1]

(c)   (i)   Sketch a triangle that has exactly one line of symmetry.   [1]

(ii)   Write down the mathematical name of your triangle.

(c)(ii) .... [1]

3 Here are the first four patterns in a sequence.

Pattern 1   Pattern 2   Pattern 3   Pattern 4
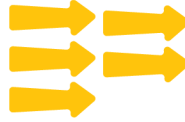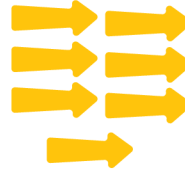
(a) Draw Pattern 5 in the sequence.   [1]

(b) Without drawing, work out how many arrows are in Pattern 10 of the sequence.
     Explain how you worked out your answer.

     .... because ....

     ....[2]

4 Here is a 3D shape.
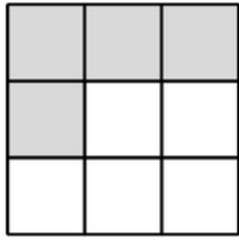
(a) Write down the fraction of the squares which are shaded.

(a) .... [1]

(b) Here is another grid of squares.
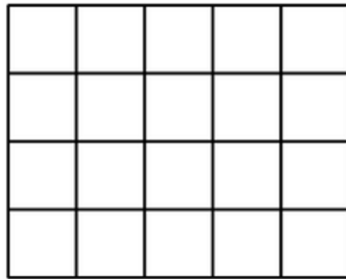
Shade some of the squares so that
Shaded squares : unshaded squares = 1 : 4

[1]

5 Pens are sold in small packs of 12 pens, medium packs of 18 pens or large packs of 25 pens.
Isabella buys 6 small packs of pens, 9 medium packs of pens and some large packs of pens.

In total Isabella buys 334 pens.

Work out how many large packs of pens Isabella buys.

.... [3]

6 (a) A quiz has 25 questions.
Priya attempts all of the questions.
She gets 80% of the questions correct.

Leo gets five of the questions wrong.

Who has the smallest number of questions wrong?
Show your working to support your answer.

.... because ....

....[3]

6 (b) Workout the value of $\dfrac{900}{5.5 \times 9}$

.... [1]

7   (a)   In a recipe, the ratio of sugar to salt needed is 3:1.
          Jamie mixes 3 kg of sugar with 1 g of salt.

          Explain what Jamie has done wrong.

          ....

          ....

          ....[1]

     (b)   Sara spends $\frac{1}{6}$ of her income on rent and saves the remainder.

          For Sara's income, find the ratio of the amount she spends on rent to the amount she saves.

          Give your answer in its simplest form.

          (b) .... : ....   [2]

8   (a)   Simplify 2 x $3a$

          (a) .... [1]

     (b)   Simplify.
          $$\frac{8x^6}{16x^2}$$

          (b) .... [2]

9   Emma is paid £18.50 per hour for working on a weekday.

On a Saturday, Emma is paid at $1\frac{1}{2}$ times this hourly rate.

How much does Emma earn for working 7 hours on a Saturday?

£ .... [3]

10   Solve 8n + 8 = 2(3n − 7)

n =... [3]

11   James invests £700 in a savings account that pays 6% simple interest per year.

Work out the total amount of interest James will have earned at the end of the 10th year

£ .... [2]

Turn over

12 Emily goes on a trip.
   She changes £450 into dollars ($) at a rate of £1 = $1.20.
   She spends $275.50 of this money.
   After the trip, Emily changes the remaining dollars back into pounds at a rate of £1 = $1.30.
   Work out how many pounds Emily gets back.

£ .... [4]

13 In a pet shop, there are three types of pets: dogs, cats, and rabbits.

There are 18 dogs.

$\frac{1}{3}$ of the pets are cats.

$\frac{1}{6}$ of the pets are rabbits.

Work out the total number of pets in the petshop.
You must show your working.

....[5]

Prepare 4 GCSEs

14 In a singing competition, four judges award marks to each contestant.
    Each judge can award 1, 2, 3, 4, or 5 marks.

    The four judges' median mark, mmm, is put into the formula

    S=−10m+50
    to get the contestant's score, S.

    (a) Alex is awarded marks of 2, 5, 3, and 4.
        Work out Alex's score.

    (a) .... [3]

    (b)   Jamie gets a score of 30.
          Jamie says:

          "The judges must have awarded marks of 2, 2, 4, and 5 because the median is 3."

          and 3×−10 + 50 = 30.

          Why is Jamie not correct?
          Show working to support your reason.

    ....

    ....

    ....[2]
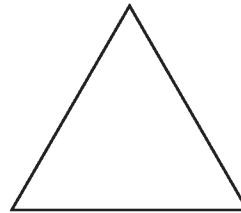
15 In this question, all lengths are in meters.

The diagram shows a rectangle and an isosceles triangle.

Not to scale

2l + 2w   2a + b

The perimeter of the rectangle is 40 m.

The perimeter of the triangle is 36 m.

(a) If l=12, find the value of w.

w= .... [2]

(b) If the lengths of the equal sides of the triangle are 10m, find the value of b.

$b =$ .... [2]

16 For each statement, complete the box to show the power of 10.

(a) One billion $= 10^{\boxed{}}$ [1]

(b) Ten million $= 10^{\boxed{}}$ [1]

17 Some boxes are each in the shape of a cuboid.
    The base of each box measures exactly 25 cm by 60 cm.

    The boxes are to be placed on their base, side by side against a wall.
    If all the shorter sides or if all the longer sides are against the wall, they fit perfectly with no gaps.

    Find the shortest possible length of the wall.

    .... cm [4]

18 The mass of a block of wood is 540 g.
    The density of the wood is 0.9 g / cm3.

    (a) Work out the volume of the block of wood.

    (a) .... cm3 [2]

    (b) Write 2.5 g / cm3 in kg / m3.

    (b) .... kg / m3 [1]

19 (a) Multiply out and simplify.

   $(x - 5) (x + 9)$

(a) .... [2]

(b) Factorise.

   $x^2 + 81$

(b) .... [1]

(c) Write 0.09581 to 1 significant figure.

(c) .... [1]

Prepare 4 GCSEs

20 In a small town, one bus arrives a day.
    The probability of rain in the town is 0.2.
    If it rains, the probability of a bus being late is 0.3.
    If it does not rain, the probability of a bus being late is 0.10.

(a) Complete the tree diagram

```
                                                    0.3        Late
                                                  /
                              Rain  <
                    0.2     /              ..............
                          /                              \  On Time
            <
                          \                 0.10
                    ..............  \                   /  Late
                              No-Rain  <
                                          ..............
                                                         \ On Time
```
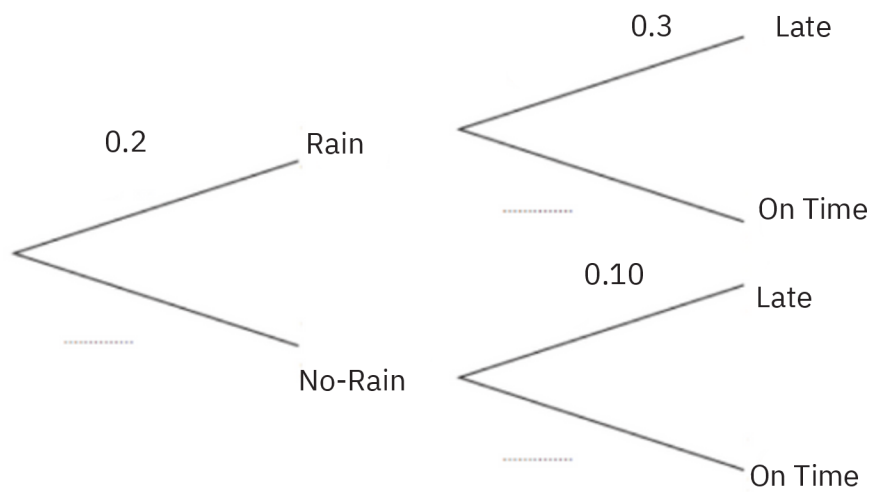
[2]

(b) Work out the number of days the bus will be late over a period of 60 days.

[3]

21 Solve the simultaneous equations.

$2x + y = 10$

$x + 2y = 4$

$x =$ ....

$y =$ .... [3]

Prepare 4 GCSEs

22 A community center has 300 members.

Some of the members wish to change a community policy.
To change a policy, at least 75% of all the members must vote 'yes'.

At a meeting of the community center, 15 members were absent and did not vote.
The other members voted yes :no:don't know in the ratio 5:2:1.

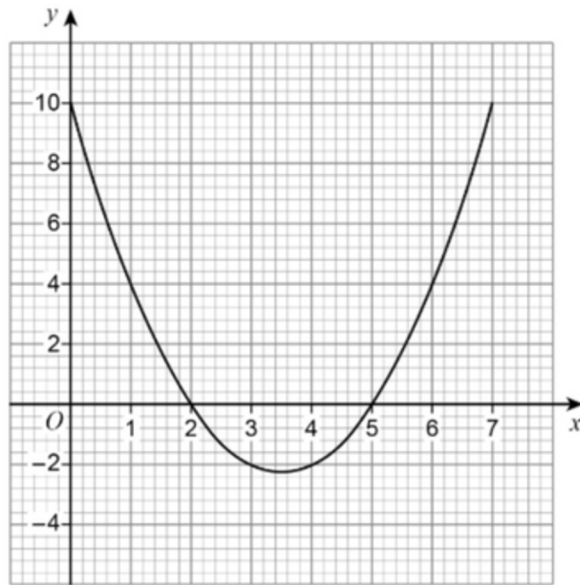Did enough members vote 'yes' to change the policy?
Show how you decide.

.... because ....

....

....

....

....[5]

23 This is a sketch of the graph of $y = x^2 - 7x + 10$

(a) Write down the value of the y-intercept.

(a) .... [1]

(b) Write down the x-coordinate of the turning point.

(b) .... [1]

Turn over

24 1500 birds are introduced into a new sanctuary that previously had no birds.
The number of birds is expected to increase by 6% each year.

(a) The table shows the expected number of birds in the sanctuary at the end of 1 year and at the end of 2 years.
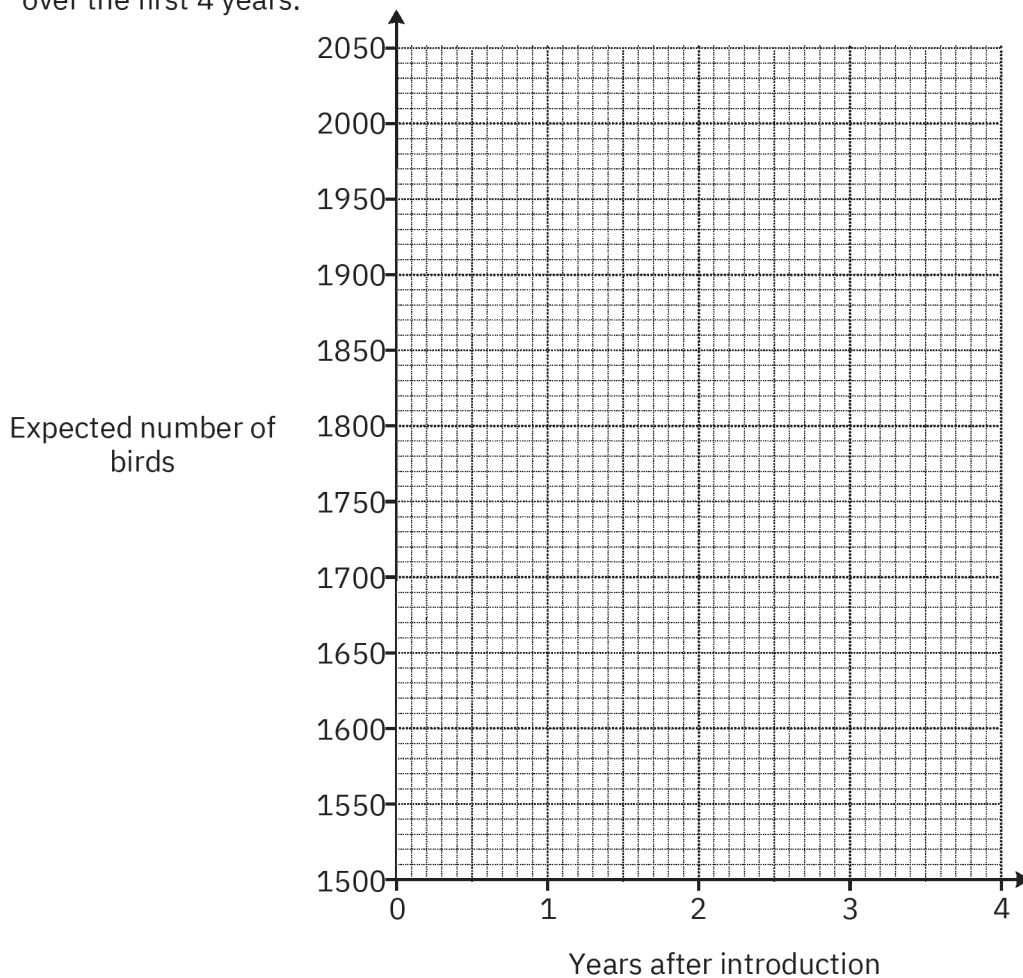
Complete the table.
Round your answers to the nearest integer.

Years after introduction	0	1	2	3	4
Expected number of birds	1500	1590	1685		

[3]

(b) Use the table to draw a suitable graph to show the expected number of birds in the sanctuary over the first 4 years.

[3]

(c) The sanctuary can support a maximum of 2500 birds.

What effect would you expect this limit to have on the shape of your graph after 4 years?

....

....

....[2]

TURN OVER FOR QUESTIONS 25 AND 26

Turn over

25 A store is trying to sell a television.
The original price of the television is normally £1200.

In a sale, the price of the television is reduced by 25%.
As a special offer, the sale price is then further reduced by p%.
The special offer price is £720.

Find the value of p.
You must show your working.

$p=$ .... [5]

26 The diagram shows a rectangular prism and a cube.
The ends of the prism are rectangles with a length of 20 cm and a width of 10 cm.
The prism is 15 cm long.

20 cm

15 cm

10 cm
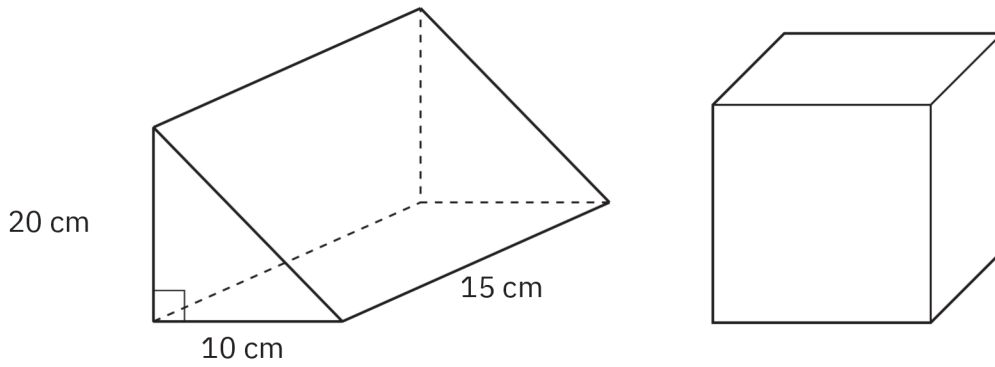
The volume of the prism is equal to the volume of the cube.

Find the surface area of the cube.
You must show your working.

.... cm2 [6]

END OF QUESTION PAPER

Prepare 4 GCSEs