Name:

GCSE 9-1 Higher
Edexcel
Set A
Paper 3 - Calculator

Corbettmαths

Equipment

1. A black ink ball-point pen.
2. A pencil.
3. An eraser.
4. A ruler.
5. A pair of compasses.
6. A protractor.
7. A calculator

Guidance

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

Information

1. Time: 1 hour 30 minutes
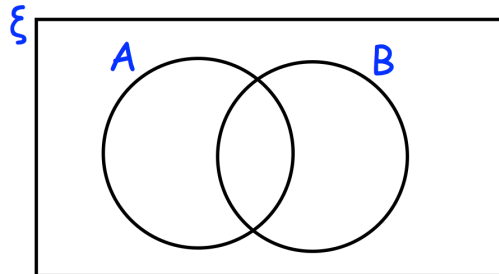2. The maximum mark for this paper is 80.
3. You may use tracing paper.

Question	Mark	Available
1		6
2		3
3		4
4		4
5		3
6		4
7		3
8		4
9		6
10		3
11		3
12		3
13		3
14		6
15		4
16		5
17		3
18		4
19		4
20		5
Total		80

1.   ξ = {odd numbers less than 32}

A = multiples of 3
B = multiples of 5

(a) Complete the Venn diagram

(4)

One of the numbers is selected at random.

(b) Write down P (A ∩ B)

....
(2)

2.   Solve the simultaneous equations

$3x - y = 23$
$2x + 3y = 8$

Do not use trial and improvement

x = ... y = ...
(3)

3. The table shows the ages of an under-21 rugby squad.

Age	Frequency
18	5
19	5
20	9
21	4

(a) Find the median age.

....
(1)

Courtney says that the mean age and median age are the same.

(b) Is Courtney correct?
You must give a reason for your answer.

....
(3)

4. Harley sold 380 ice creams.
He sold only vanilla, chocolate, strawberry and honeycomb ice creams.
45% of the ice creams are chocolate.

The ratio of vanilla ice creams to strawberry ice creams to honeycomb ice creams is 1:2:8.

Work out how many more chocolate ice creams are sold than honeycomb ice cream.

....

(4)

5. Shown below are two identical regular polygons and an equilateral triangle.
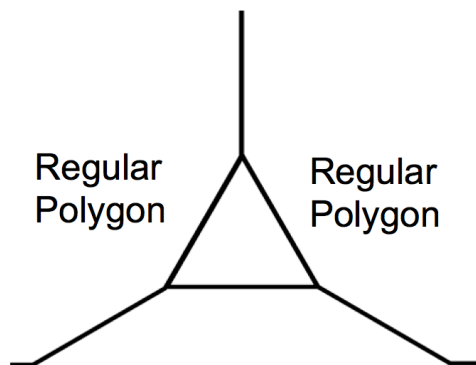
Calculate the number of sides each regular polygon has.

....

(3)

6. Material A has a density of 5.8g/cm³.
   Material B has a density of 4.1g/cm³.
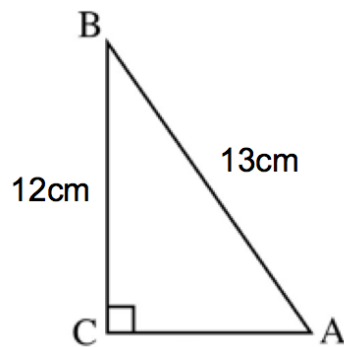
   377g of Material A and 1.64kg of Material B form Material C.

   Work out the density of Material C.
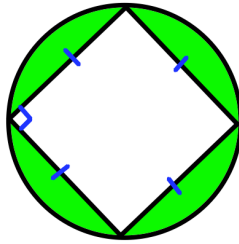
   ………………….g/cm³

   (4)

7.

   Calculate the size of angle BAC.

   ………………⁰

   (3)

8.   Shown is a square and a circle.

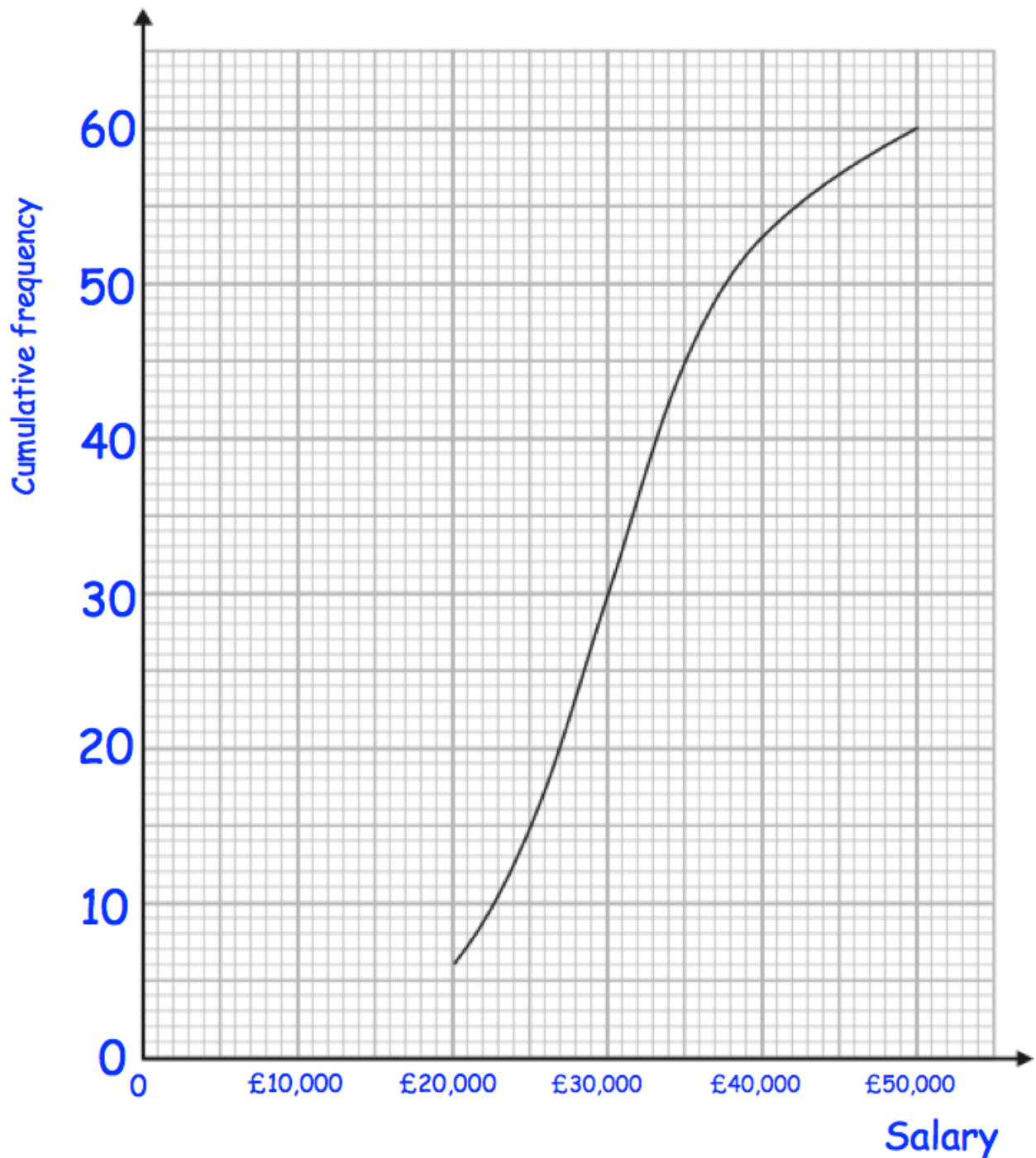Each vertex of the square is on the circumference of the circle.

The area of the circle is 81cm²

Find the area of the shaded region.
Give your answer to 4 significant figures.

....................cm²

(4)

9. A university surveyed 60 mathematics graduates on their starting salary.
The cumulative frequency graph shows some information about the salaries.

(a) Use the graph to find an estimate for the median salary.

£.............................

(1)

The 60 mathematics graduates
had a minimum salary of £16,000
and a maximum salary of £48,000.

(b) Use this information and the cumulative frequency curve to draw a box plot for the 60 mathematics graduates.

Mathematics Graduates

£0   £10,000   £20,000   £30,000   £40,000   £50,000
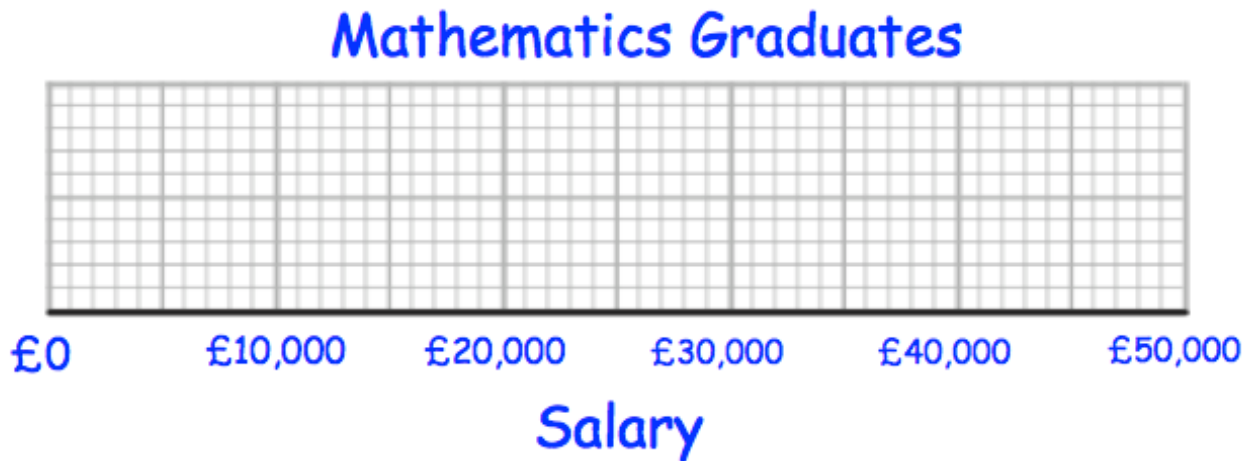
Salary

(3)

The university also surveyed 60 archaeology graduates.
The box plot below shows information about their salaries.

Archaeology Graduates

£0   £10,000   £20,000   £30,000   £40,000   £50,000
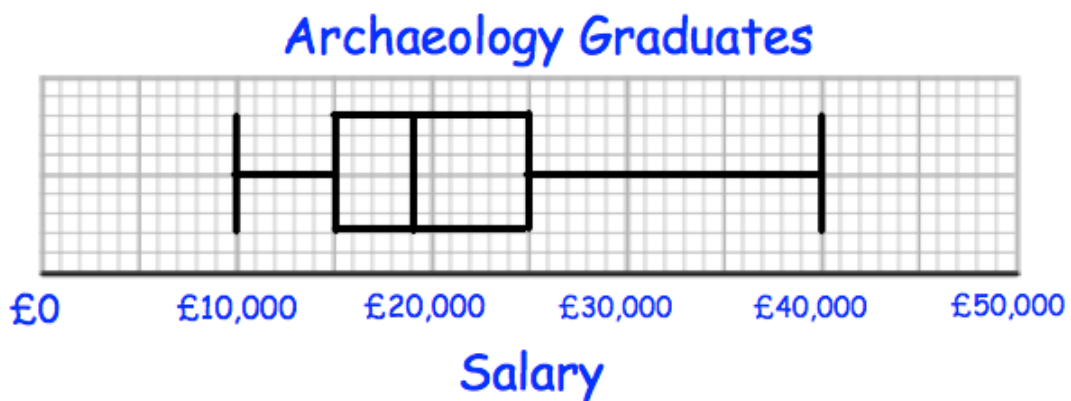
Salary

(c) Compare the distribution of the salaries of the mathematics graduates with the distribution of the salaries of the archaeology graduates.

....

....

....

(2)

10. Charlotte invests £5000.
The bank pays 10% interest for the first year and then y% every year after that.
After three years, Charlotte has £5610.55

Calculate y.

£........................

(3)

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11. A food standards inspector is going to visit 3 establishments in one day.
In the town, there are 40 restaurants and 12 cafes.

He writes a list of the three different establishments, and the order will either be:

Cafe
Restaurant
Restaurant

Restaurant
Cafe
Cafe

How many possible lists could he write?

....

(3)

12.   The points D, E, F and G lie in a straight line.
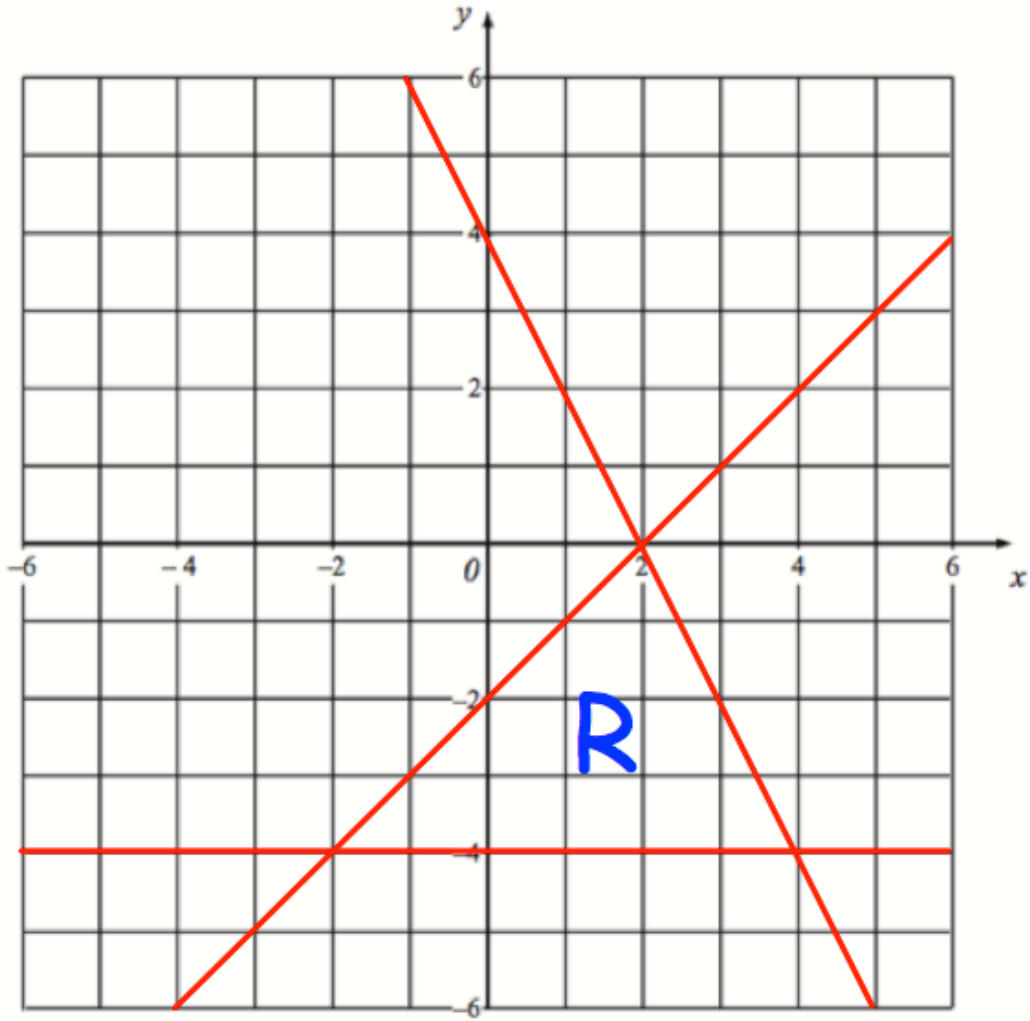
DE : EG = 1 : 4
DF : FG = 9 : 11

Work out DE : EF : FG

……………… : ……………… : ....

(3)

13.

The region labelled R satisfies three inequalities.

State the three inequalities

....

....

....

(3)

14. (a) Simplify fully

$$\frac{5x^2 - 13x - 6}{x^2 - 9}$$

....

(3)

(b) Make m the subject of the formula

$$y = \frac{m + 4}{m + 5}$$

m = ...

(3)

15.
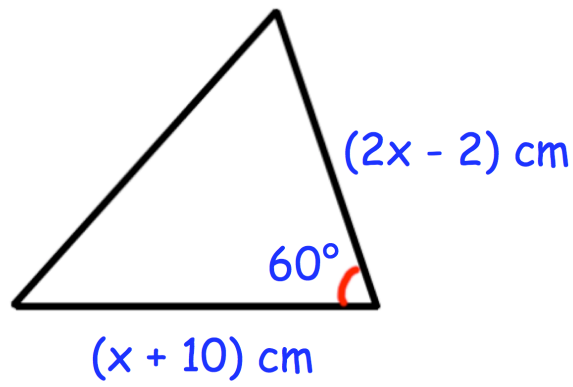
The area of the triangle is $90\sqrt{3}$ cm²

Work out the value of x.

x = ...

(4)

16. Using $x_{n+1} = -3 - \dfrac{2}{x_n^2}$

with $x_0 = -3.5$

(a) find the values of x_1, x_2 and x_3

$x_1 = $ ……………………..

$x_2 = $ ……………………..

$x_3 = $ ……………………..

(3)

(b) Explain the relationship between the values of x_1, x_2 and x_3 and the equation $x^3 + 3x^2 + 2 = 0$

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(2)

17. The curved surface area of a cone is given by the formula

$$A = \pi r l$$

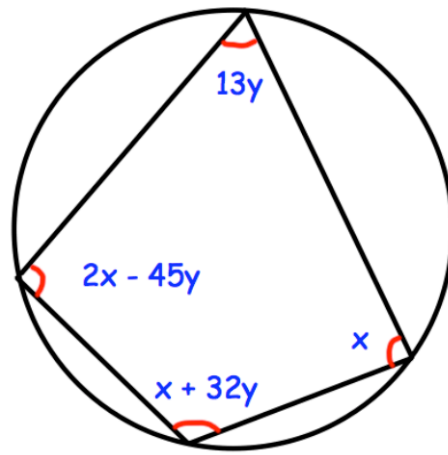where A is the curved surface area
r is the radius of the base of the cone
and l is the slant height

Given   A = 220 cm² correct to 3 significant figures,
             and r = 8 cm correct to 1 significant figure.

Calculate the upper bound for l.

....................cm

(3)

18.

Find the values of x and y

....

(4)

19. Solve the inequality $2x^2 + 9x + 10 > 0$

....

(4)

20.   The circle C has equation $x^2 + y^2 = 4$

       The circle is reflected in the line y = 2 to give circle D

       Circle D is translated by the vector $\begin{pmatrix} -1 \\ 0 \end{pmatrix}$ to give circle E

       (a) Draw a sketch of circle E

                                                                                    (2)

       (b)   Write down the coordinates of the centre of circle E

                                                          (………. , ……….)
                                                                                    (1)

       (c)   Write down the coordinates of points where circle E meets the y-axis

                                      (………. , ……….)   and   (………. , ……….)
                                                                                    (2)