5 The table shows information about the weekly earnings of 20 people who work in a shop.

Weekly earnings (£x)	Frequency
$150 < x \leqslant 250$	1
$250 < x \leqslant 350$	11
$350 < x \leqslant 450$	5
$450 < x \leqslant 550$	0
$550 < x \leqslant 650$	3

(a) Work out an estimate for the mean of the weekly earnings.

£.....

(3)

Nadiya says,

"The mean may **not** be the best average to use to represent this information."

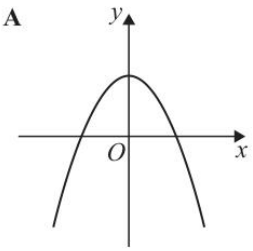
(b) Do you agree with Nadiya?
You must justify your answer.

(1)

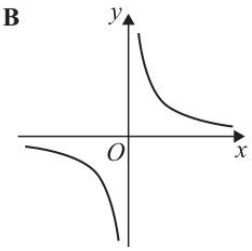
(Total for Question 5 is 4 marks)

12 Here are some graphs.

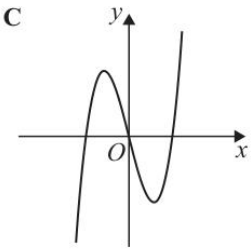
A



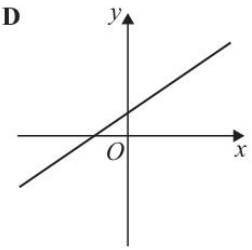
B



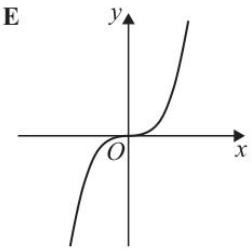
C



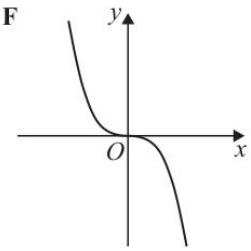
D



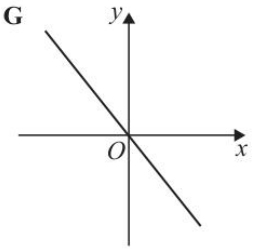
E



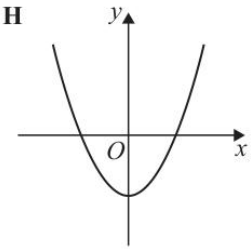
F



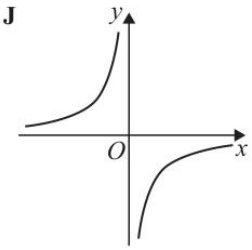
G



H



J



Write down the letter of the graph that could have the equation

(i) $y = x^2 - 4$

.....

(1)

(ii) $y = -x^3$

.....

(1)

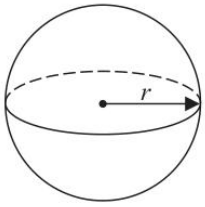
(iii) $y = -\frac{5}{x}$

16 Solve $(4x - 3)(x + 5) < 0$

(Total for Question 16 is 2 marks)

DO NOT WRITE IN THIS AREA

16 Here is a sphere.



Surface area of sphere = $4\pi r^2$

$\frac{3}{8}$ of the surface area of this sphere is $75\pi \text{ cm}^2$

Find the diameter of the sphere.

Give your answer in the form $a\sqrt{b}$ where a is an integer and b is a prime number.

..... cm

(Total for Question 16 is 4 marks)

15 The equation of line $\mathbf{L_1}$ is $y = 2x - 5$
The equation of line $\mathbf{L_2}$ is $6y + kx - 12 = 0$

$\mathbf{L_1}$ is perpendicular to $\mathbf{L_2}$

Find the value of k.
You must show all your working.

$k =$ .....

(Total for Question 15 is 3 marks)

5

You can work out the amount of medicine, c m*l*, to give to a child by using the formula

$$c = \frac{ma}{150}$$

m is the age of the child, in months.
a is an adult dose, in m*l*.

A child is 30 months old.
An adult's dose is 40 m*l*.

Work out the amount of medicine you can give to the child.

..... m*l*

(Total for Question 5 is 2 marks)

17 Solve $\frac{4x-1}{5} + \frac{x+4}{2} = 3$

$x =$ .....

(Total for Question 17 is 3 marks)

8 Trams leave Piccadilly

to Eccles every 9 minutes

to Didsbury every 12 minutes

A tram to Eccles and a tram to Didsbury both leave Piccadilly at 9 am.

At what time will a tram to Eccles and a tram to Didsbury next leave Piccadilly at the same time?

.....

(Total for Question 8 is 3 marks)

25 The expression $x^2 - 8x + 21$ can be written in the form $(x - a)^2 + b$ for all values of x.

(a) Find the value of a and the value of b.

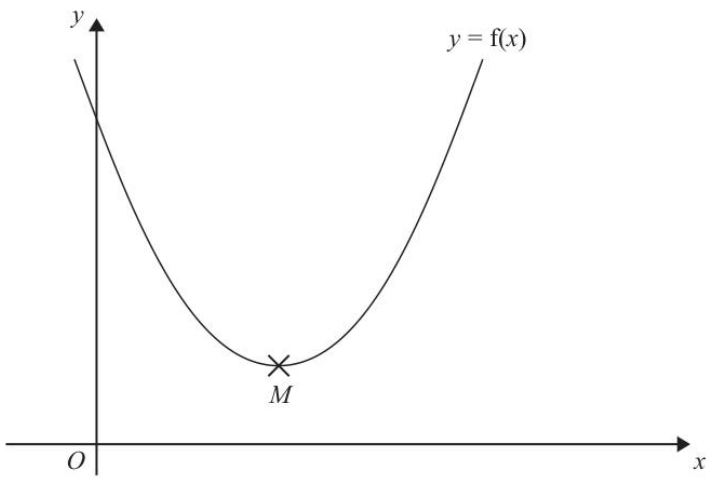
$a =$ .....

$b =$ .....

(3)

The equation of a curve is $y = f(x)$ where $f(x) = x^2 - 8x + 21$

The diagram shows part of a sketch of the graph of $y = f(x)$.



The minimum point of the curve is M.

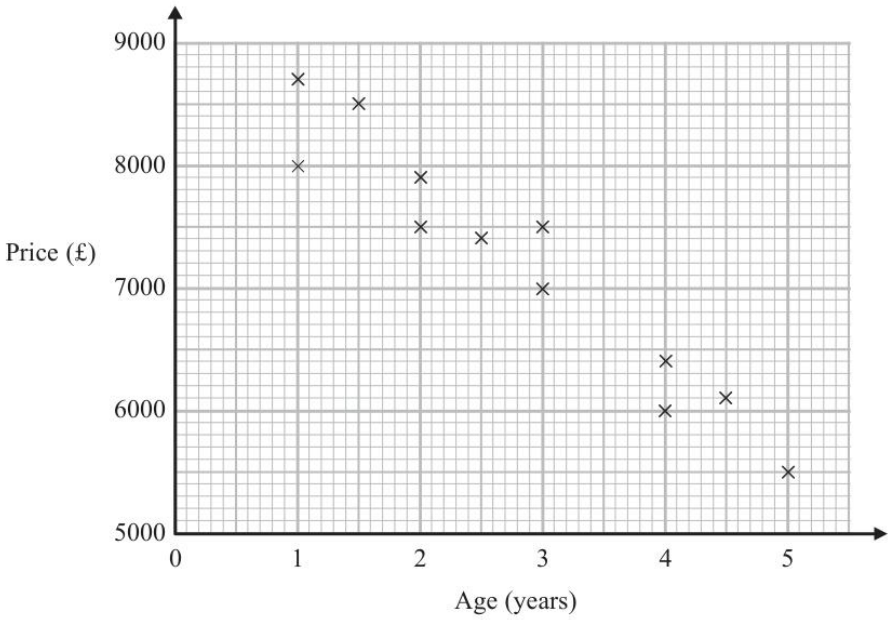
(b) Write down the coordinates of M.

(..... , ...)

(1)

(Total for Question 25 is 4 marks)

6 The scatter graph shows information about the age and the price of each of 12 cars of the same model.



(a) Describe the relationship between the age of a car and its price.

.....

.....

(1)

A different car of the same model is $3\frac{1}{2}$ years old.

(b) Estimate the price of this car.

£.....

(2)

(Total for Question 6 is 3 marks)

14

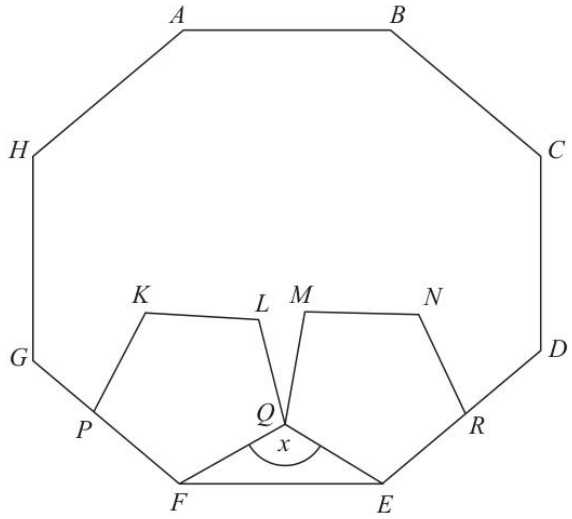


Diagram **NOT** accurately drawn

ABCDEFGH is a regular octagon.
KLQFP and *MNREQ* are two identical regular pentagons.

Work out the size of the angle marked x.
You must show all your working.

.....°

(Total for Question 14 is 4 marks)

5 (a) Find the value of the reciprocal of 1.6
Give your answer as a decimal.

.....

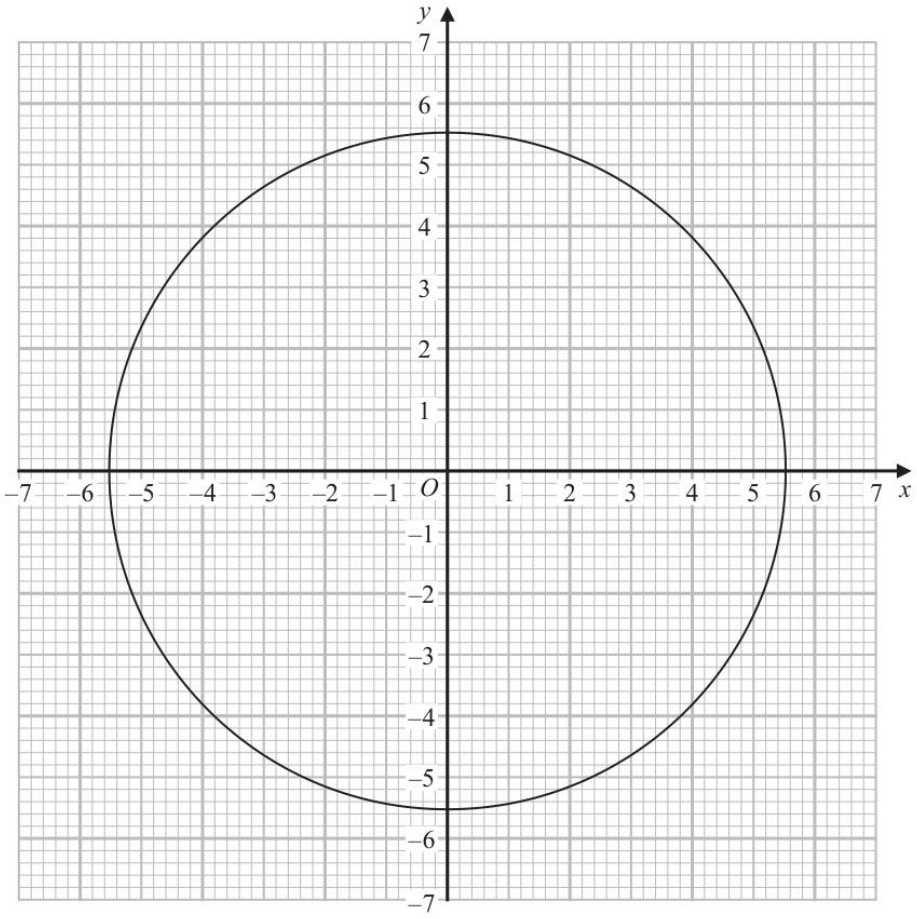
(1)

Jess rounds a number, x, to one decimal place.
The result is 9.8

(b) Write down the error interval for x.

(Total for Question 5 is 3 marks)

20 The diagram shows the graph of $x^2 + y^2 = 30.25$



Use the graph to find estimates for the solutions of the simultaneous equations

$$x^2 + y^2 = 30.25$$
$$y - 2x = 1$$

(Total for Question 20 is 3 marks)

22 There are only green pens and blue pens in a box.

There are three more blue pens than green pens in the box.
There are more than 12 pens in the box.

Simon is going to take at random two pens from the box.

The probability that Simon will take two pens of the same colour is $\frac{27}{55}$

Work out the number of green pens in the box.

(Total for Question 22 is 6 marks)

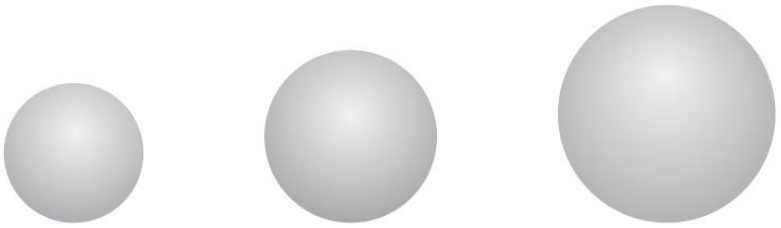
5 A plane travels at a speed of 213 miles per hour.

(a) Work out an estimate for the number of seconds the plane takes to travel 1 mile.

(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

(Total for Question 5 is 4 marks)

12 Here are three spheres.



P **Q** **R**

The volume of sphere **Q** is 50% more than the volume of sphere **P**.
The volume of sphere **R** is 50% more than the volume of sphere **Q**.

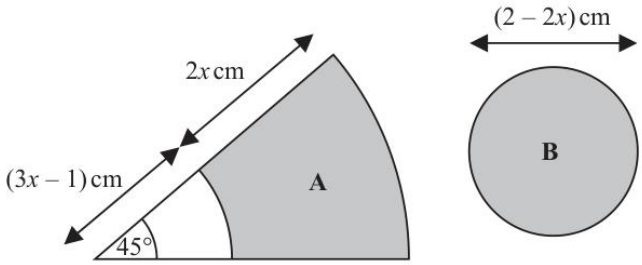
Find the volume of sphere **P** as a fraction of the volume of sphere **R**.

.....

(Total for Question 12 is 3 marks)

22 The diagram shows two shaded shapes, **A** and **B**.

Shape **A** is formed by removing a sector of a circle with radius $(3x - 1)$ cm from a sector of the circle with radius $(5x - 1)$ cm.
Shape **B** is a circle of diameter $(2 - 2x)$ cm.



The area of shape **A** is equal to the area of shape **B**.

Find the value of x.
You must show all your working.

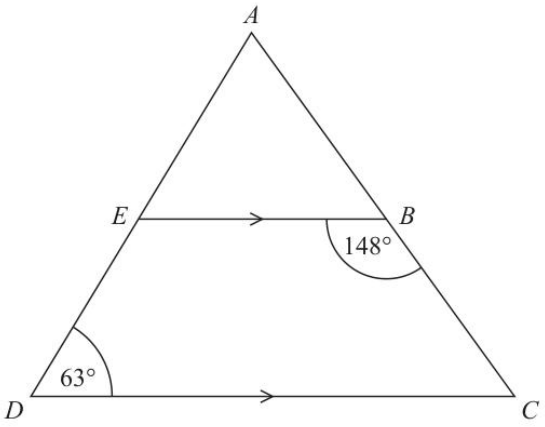
(Total for Question 22 is 5 marks)

9 Write these numbers in order of size.
Start with the smallest number.

6.72×10^5 67.2×10^{-4} 672×10^4 $0.000\,672$

(Total for Question 9 is 2 marks)

6 *ADC* is a triangle.



AED and *ABC* are straight lines.
EB is parallel to *DC*.

Angle *EBC* = 148°
Angle *ADC* = 63°

Work out the size of angle *EAB*.
You must give a reason for each stage of your working.

(Total for Question 6 is 5 marks)

1 The first five terms of an arithmetic sequence are

1 4 7 10 13

Write down an expression, in terms of n, for the nth term of this sequence.

(Total for Question 1 is 2 marks)

19 Solve $\frac{1}{2x-1}+\frac{3}{x-1}=1$

Give your answer in the form $\frac{p \pm \sqrt{q}}{2}$ where p and q are integers.

(Total for Question 19 is 4 marks)

THIS AREA

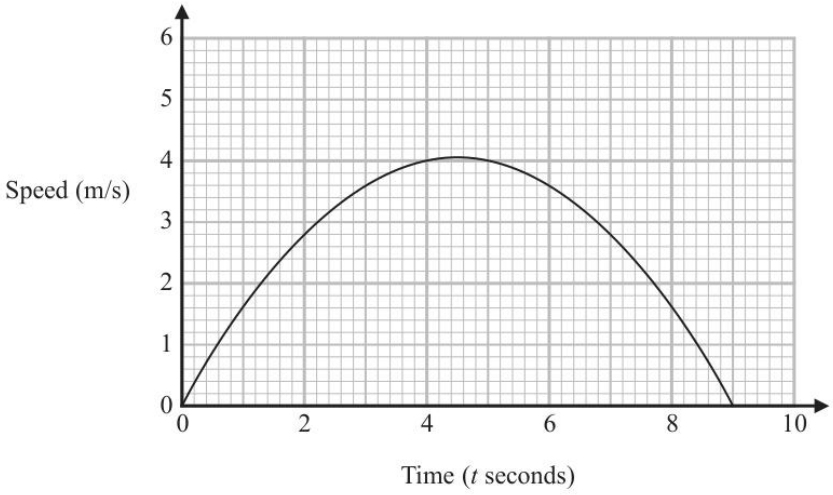
16 A first aid test has two parts, a theory test and a practical test.
The probability of passing the theory test is 0.75
The probability of passing only one of the two parts is 0.36

The two events are independent.

Work out the probability of passing the practical test.

(Total for Question 16 is 4 marks)

14 Here is a speed-time graph.



(a) Work out an estimate of the gradient of the graph at $t = 2$

(3)

(b) What does the area under the graph represent?

(Total for Question 14 is 4 marks)