Centre Number | Candidate Number

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Time 1 hour 30 minutes

Paper reference **1MA1/1H**

Mathematics

PAPER 1 (Non-Calculator)
Higher Tier
Mock set 7

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Total Marks

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*.
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Tim, Jason and Peter share £60 in the ratio $3:2:5$

How much money does Jason get?

£...

(Total for Question 1 is 2 marks)

2 Dave is 4 years older than Colin.
Ruth is three times as old as Dave.

The total of their three ages is 56

Work out Ruth's age.

....

(Total for Question 2 is 4 marks)

3 The volume of a solid cube is $125 \, \text{cm}^3$

Work out the total surface area of the cube.

.... cm²

(Total for Question 3 is 4 marks)

4 Darren walks at a speed of 5.7 kilometres per hour.

(a) Work out an estimate for the distance, in metres, that Darren walks in 19 minutes.

.... metres

(3)

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

....

....

(1)

(Total for Question 4 is 4 marks)

5 A company's profit of £18000 is shared by 2 directors and 24 employees.

$\dfrac{1}{3}$ of the profit is shared equally between the 2 directors of the company.

The rest of the profit is shared equally between the 24 employees of the company.

The amount each director gets $= n \times$ the amount each employee gets.

Work out the value of n.

You must show how you get your answer.

$n =$ ....
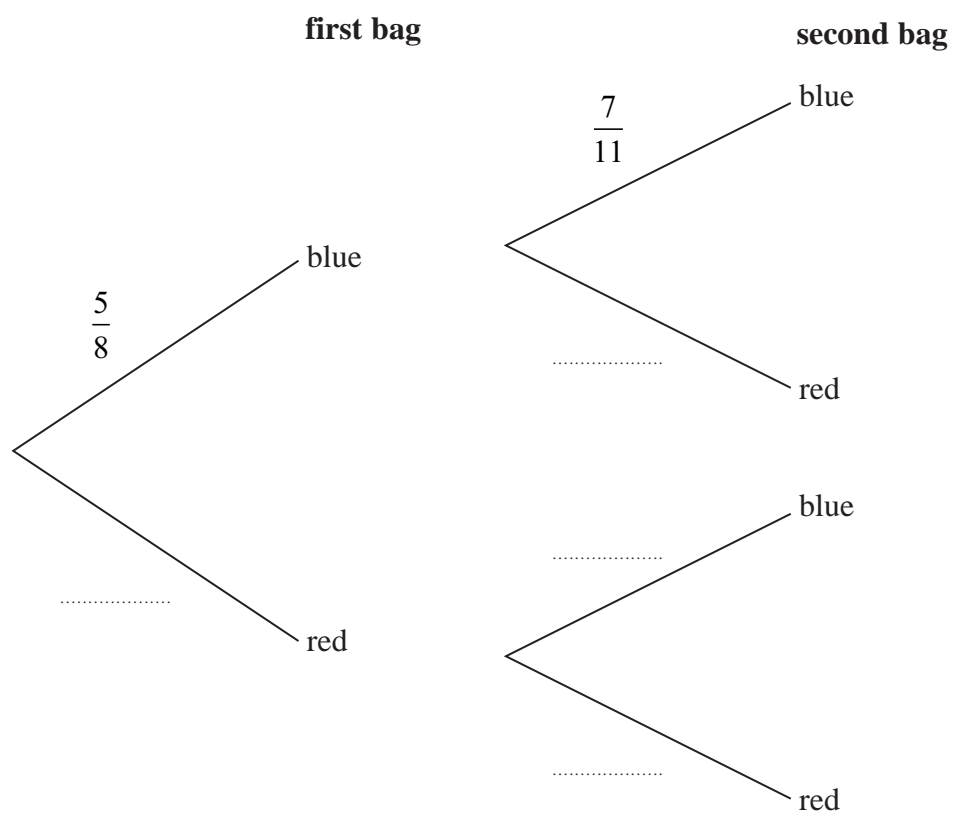
(Total for Question 5 is 4 marks)

6 Kabita has two bags.

In the first bag there are 5 blue discs and 3 red discs.
In the second bag there are 7 blue discs and 4 red discs.

Kabita takes at random a disc from the first bag.
She then takes at random a disc from the second bag.
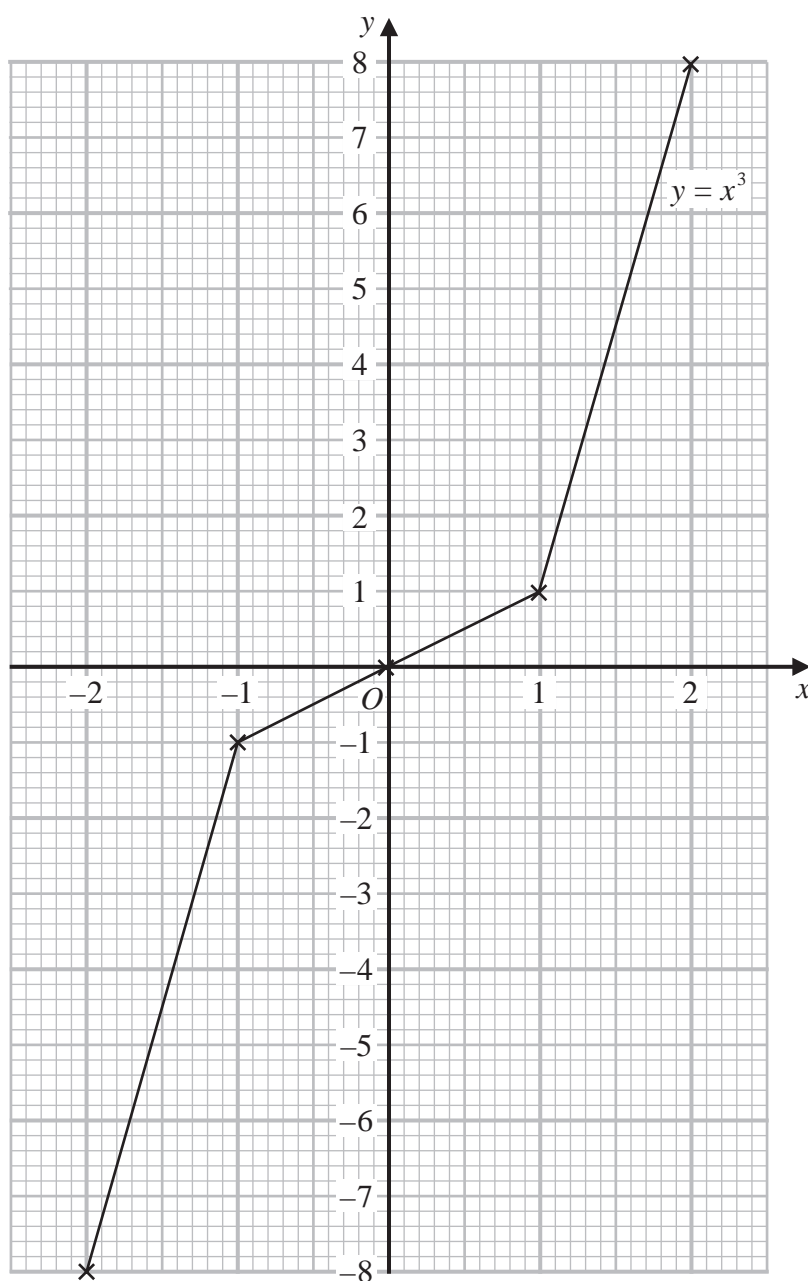
(a) Complete the probability tree diagram.

first bag   **second bag**

                                    blue
                       $\frac{7}{11}$
              blue
        $\frac{5}{8}$
                       ....
                                    red

                                    blue
                       ....
        ....
              red
                       ....
                                    red

(2)

(b) Work out the probability that Kabita takes two red discs.

....

(2)

(Total for Question 6 is 4 marks)

Turn over ▶

7 Alice is asked to draw the graph of $y = x^3$

Here is her graph.

Write down one thing that is wrong with Alice's graph.

....

....

....

(Total for Question 7 is 1 mark)

8 The diagram shows two circles.
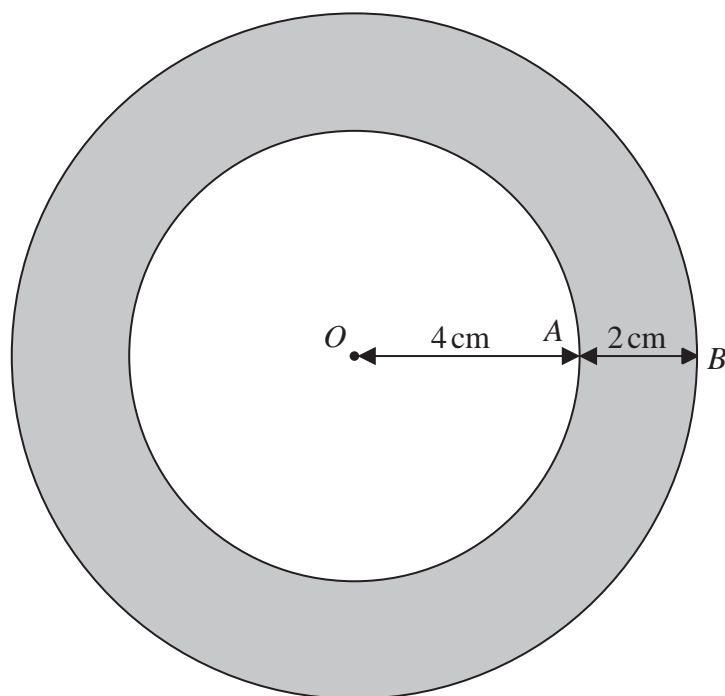
Each circle has centre O.
OAB is a straight line.

Tim says,
"Exactly half of the diagram is shaded because $AB = \dfrac{1}{2} OA$"

Is Tim correct?
You must show all your working.

(Total for Question 8 is 3 marks)

Turn over ▶

9 (a) Solve $\dfrac{4x + 3}{2} \geqslant x - 3$

....

(3)

(b) Solve $x^2 + 12x + 35 = 0$

....

(2)

(Total for Question 9 is 5 marks)

10 The table shows information about the marks scored in a test by students in group A.

least mark	77
median	82
lower quartile	80
interquartile range	4
range	10

(a) Draw a box plot for this information.

Group A

70   75   80   85   90

Test mark
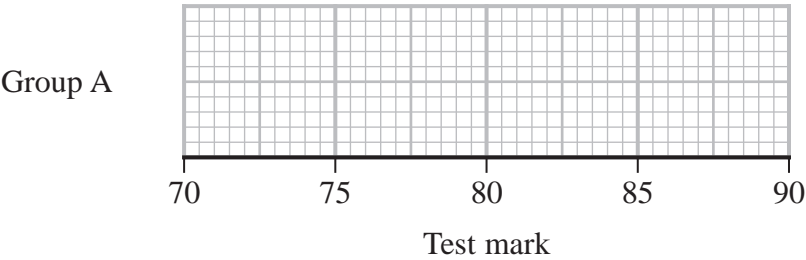
(3)

The box plot below shows information about the marks scored in the test by students in group B.
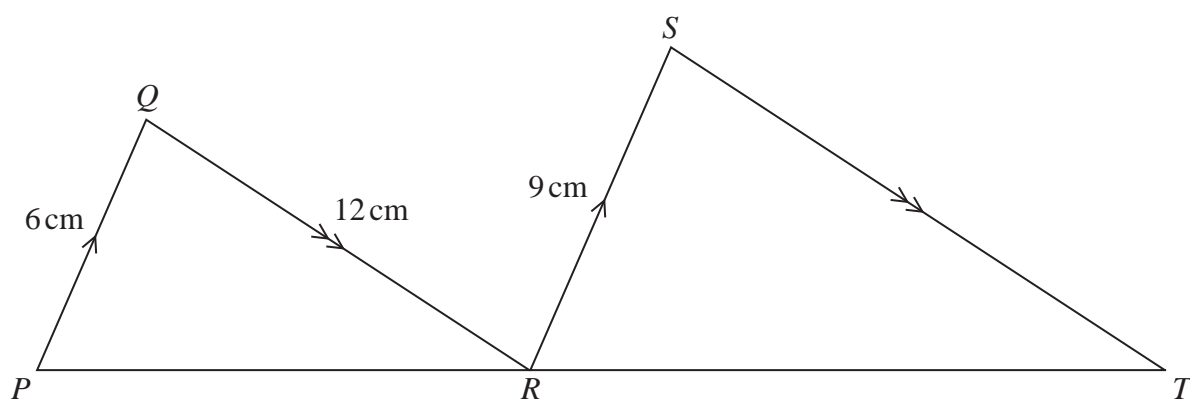
Group B

70   75   80   85   90

Test mark
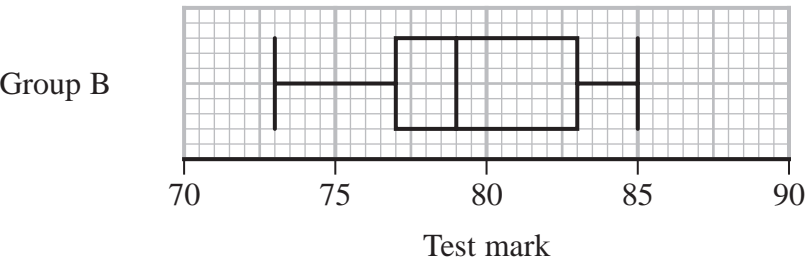
(b) Compare the distribution of marks scored by students in group A with the distribution of marks scored by students in group B.

....

....

....

....

(2)

(Total for Question 10 is 5 marks)

11

PRT is a straight line.

(a) Calculate the length of *ST*.

.... cm

(2)

PT = 35 cm

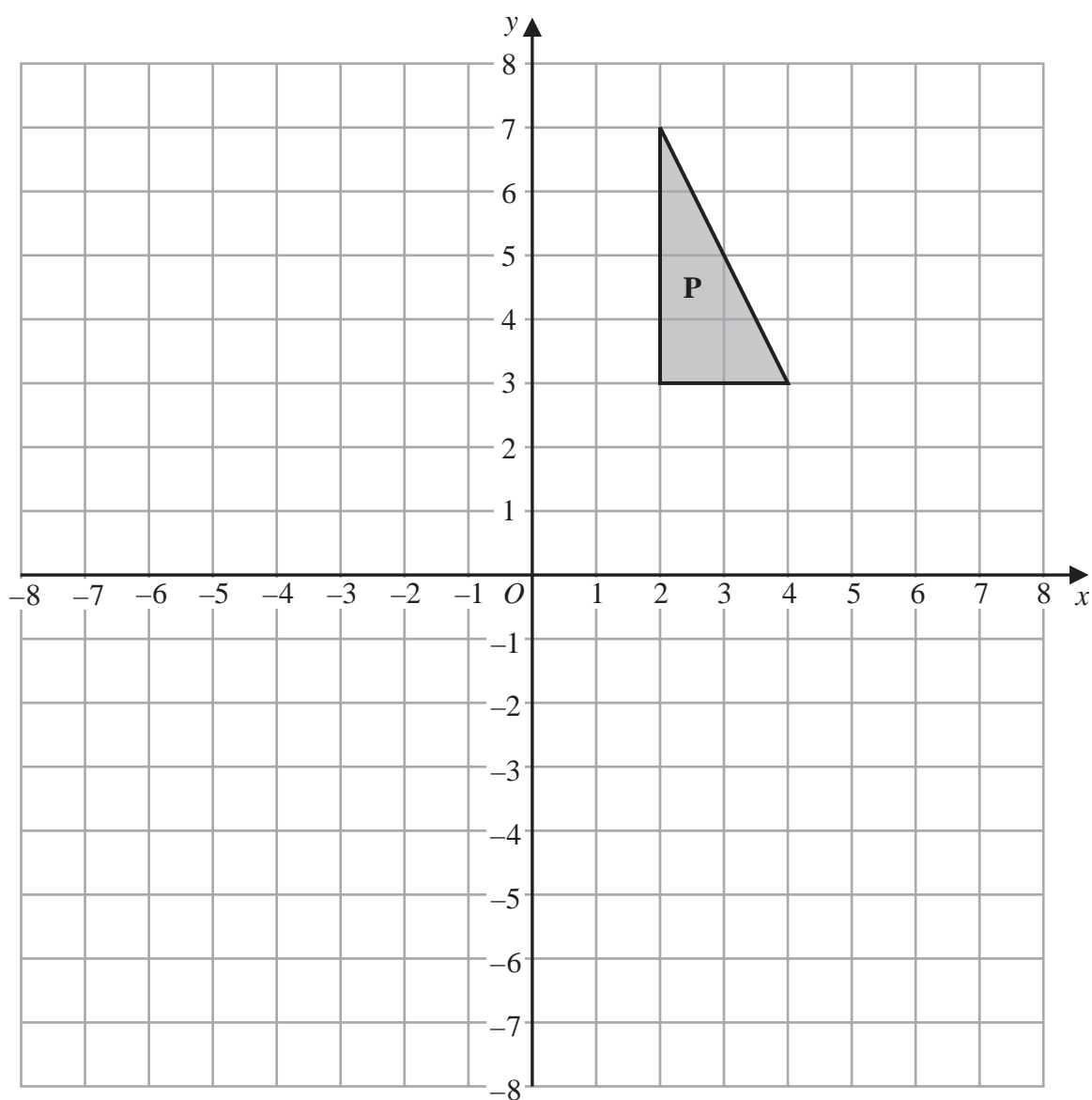(b) Calculate the length of *PR*.

.... cm

(2)

(Total for Question 11 is 4 marks)

12

Enlarge shape **P** by scale factor $-\dfrac{1}{2}$ with centre of enlargement (0, 2)

(Total for Question 12 is 2 marks)

13 Three solid shapes **A**, **B** and **C** are similar.

The volume of shape **A** is $27\,\text{cm}^3$
The volume of shape **B** is $64\,\text{cm}^3$

The ratio of the surface area of shape **B** to the surface area of shape **C** is $8:15$

Work out the ratio of the height of shape **A** to the height of shape **C**.

....

(Total for Question 13 is 4 marks)

14 y is inversely proportional to x^3

$y = 3$ when $x = 10$

Find the value of y when $x = 5$

$y =$ ....

(Total for Question 14 is 3 marks)

15 A, B, C and D are four points on a straight line.
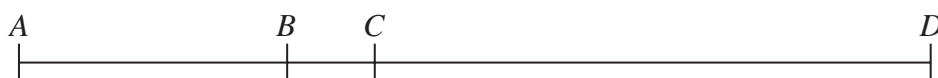
$AB:BD = 1:2$
$AC:CD = 5:7$

Show that $BD = 8BC$

(Total for Question 15 is 3 marks)

16 The diagram shows a shape.

$2x + 3$

3

$5x - 2$

$2x$
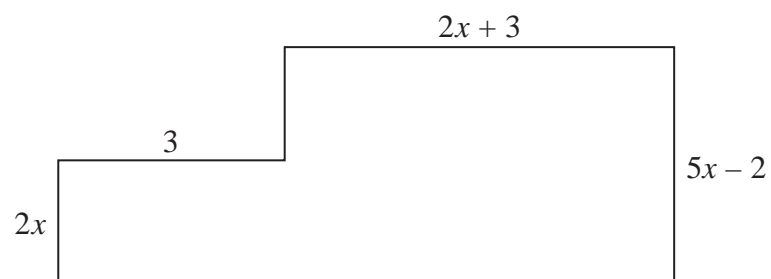
All the corners are right angles.
All the measurements are given in centimetres.

The area of the shape is $14\,\text{cm}^2$

Find the value of x.

$x = $ ....

(Total for Question 16 is 5 marks)

17 Here are two right-angled triangles.
All the measurements are given in centimetres.
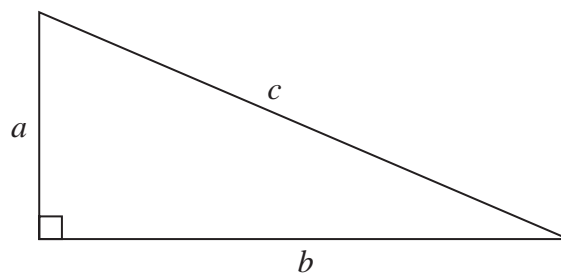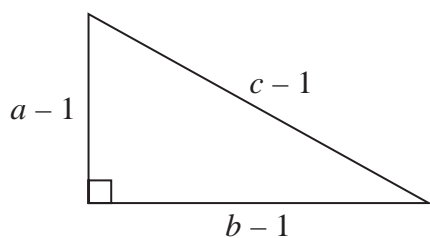
Show that $2a + 2b - 2c = 1$

(Total for Question 17 is 3 marks)

18 (a) Work out the value of $\left(2\sqrt{5}\right)^2$

....
(1)

(b) Show that $\left(1-\sqrt{7}\right)\left(3+2\sqrt{7}\right)$ can be written in the form $a+b\sqrt{7}$ where a and b are integers.

(2)

(c) Rationalise the denominator of $\dfrac{1}{4-\sqrt{11}}$

....
(2)

(Total for Question 18 is 5 marks)

19 A fair dice is thrown n times.

Find an expression for the probability of getting at least one six in the n throws.

....

(Total for Question 19 is 2 marks)

20 The functions f and g are such that

$$f(x) = cx + d \qquad g(x) = 2x + 5 \qquad \text{where } c \text{ and } d \text{ are constants.}$$

$f(4) = 13$ and $g^{-1}(15) = f(2)$

Find the value of c and the value of d.

$c = $ ....

$d = $ ....

(Total for Question 20 is 5 marks)

21
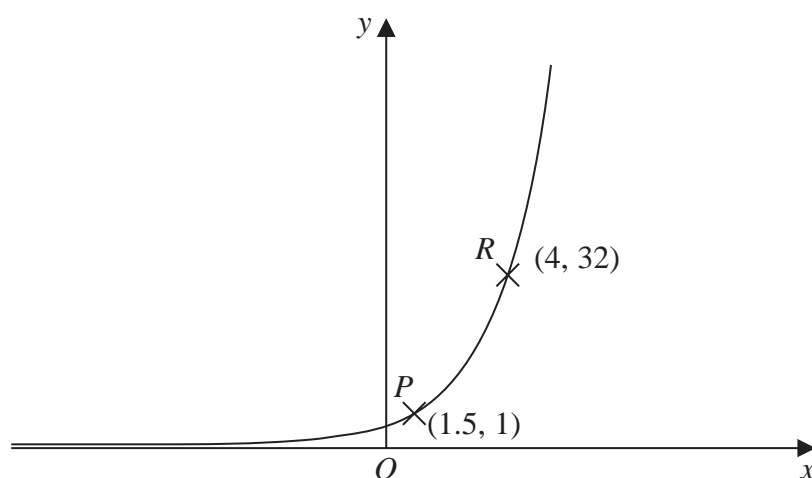
The diagram shows a sketch of the graph $y = ab^x$

The curve passes through the point P with coordinates $(1.5, 1)$ and the point R with coordinates $(4, 32)$

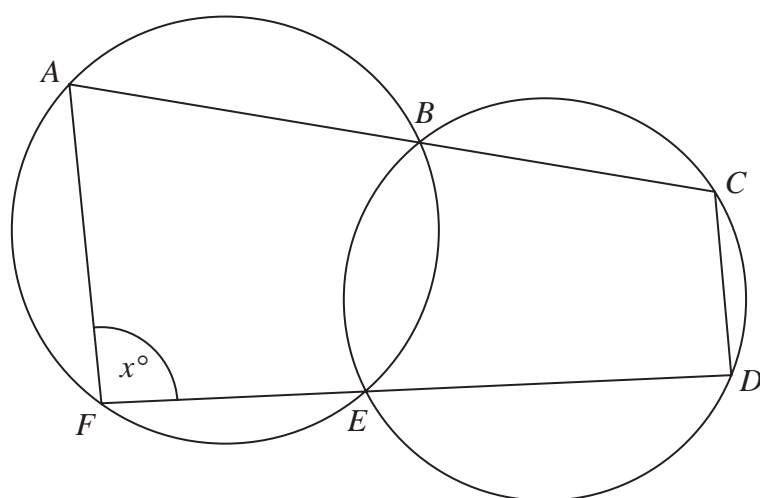The curve also passes through the point T with coordinates $(-1, k)$

Find the value of k.

$k =$ ....

(Total for Question 21 is 4 marks)

S 7 0 4 0 3 A 0 1 8 2 0

22

A, *B*, *E* and *F* lie on a circle.
B, *C*, *D* and *E* lie on a different circle.

ABC and *FED* are straight lines.
Angle *AFD* = $x°$

Prove that *AF* and *CD* are parallel.

(Total for Question 22 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

BLANK PAGE