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*.
- Calculators may be used.
- Any diagrams may NOT be accurately drawn, unless otherwise indicated.
- You must **show all your working out** with **your answer clearly identified** at the **end of your solution**.

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.
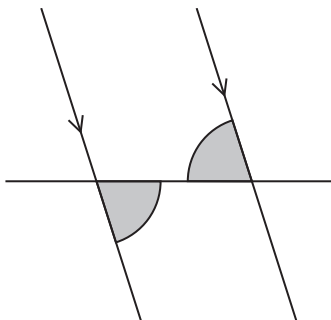- Check your answers if you have time at the end.

Turn over ▶

Pearson

SECTION A

Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1   Which word describes the shaded angles in the diagram?

Alternate	Corresponding	Interior	Opposite
☒	☒	☒	☒

(Total for Question 1 is 1 mark)

2   Which word describes the line AB on the diagram?
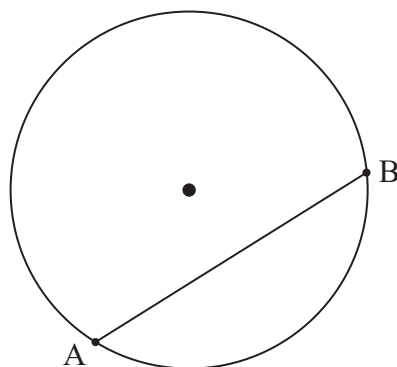
Chord	Diameter	Radius	Tangent
☒	☒	☒	☒

(Total for Question 2 is 1 mark)

P62912A0224

3 Simplify the expression

$$\frac{t^6 \times (t^5)^2}{t^5}$$

t^8 t^{11} t^{12} t^{17}

☒   ☒   ☒   ☒

(Total for Question 3 is 1 mark)

4 What is 1400 millimetres in metres?

0.14   1.4   14   140

☒   ☒   ☒   ☒

(Total for Question 4 is 1 mark)

5 What is the reciprocal of $2\frac{3}{4}$?

$\frac{4}{11}$ $\frac{11}{4}$ $2\frac{4}{3}$ 2.75

☒   ☒   ☒   ☒

(Total for Question 5 is 1 mark)

6 The age of 15 customers in a shop are recorded in the stem and leaf diagram.

Stem	Leaf
2	5 8 9
3	2 3 3 5 7
4	1 4 5
5	5 7 9
6	0

Key: 2 | 5   means 25

What is the median age of the customers in the shop?

4   5   37   44

☒   ☒   ☒   ☒

(Total for Question 6 is 1 mark)

7 Factorise $x^2 - 64$

$x(x - 8)$ $(x - 8)^2$ $(x - 8)(x + 8)$ $x(x - 64)$

☒   ☒   ☒   ☒

(Total for Question 7 is 1 mark)

8 Which number is a factor of 90 and a multiple of 6?

9   18   36   45

☒   ☒   ☒   ☒

(Total for Question 8 is 1 mark)

9 Which of these has the highest value?

$\frac{4}{9}$ 0.445   44% $\frac{11}{25}$

☒   ☒   ☒   ☒

(Total for Question 9 is 1 mark)

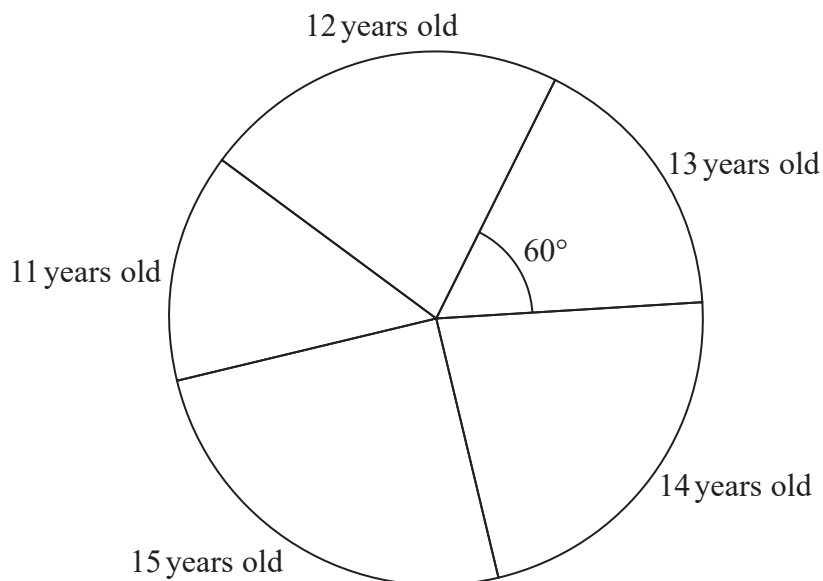**10** What is 19 364 written to 3 significant figures?

194   19 000   19 300   19 400

☒   ☒   ☒   ☒

(Total for Question 10 is 1 mark)

11 This pie chart shows the ages of 240 children at a school.

How many of the children are 13 years old?

40	60	80	144
☒	☒	☒	☒

(Total for Question 11 is 1 mark)

12 x is directly proportional to y.
When x is 16, y is 40

What is x when y is 150?

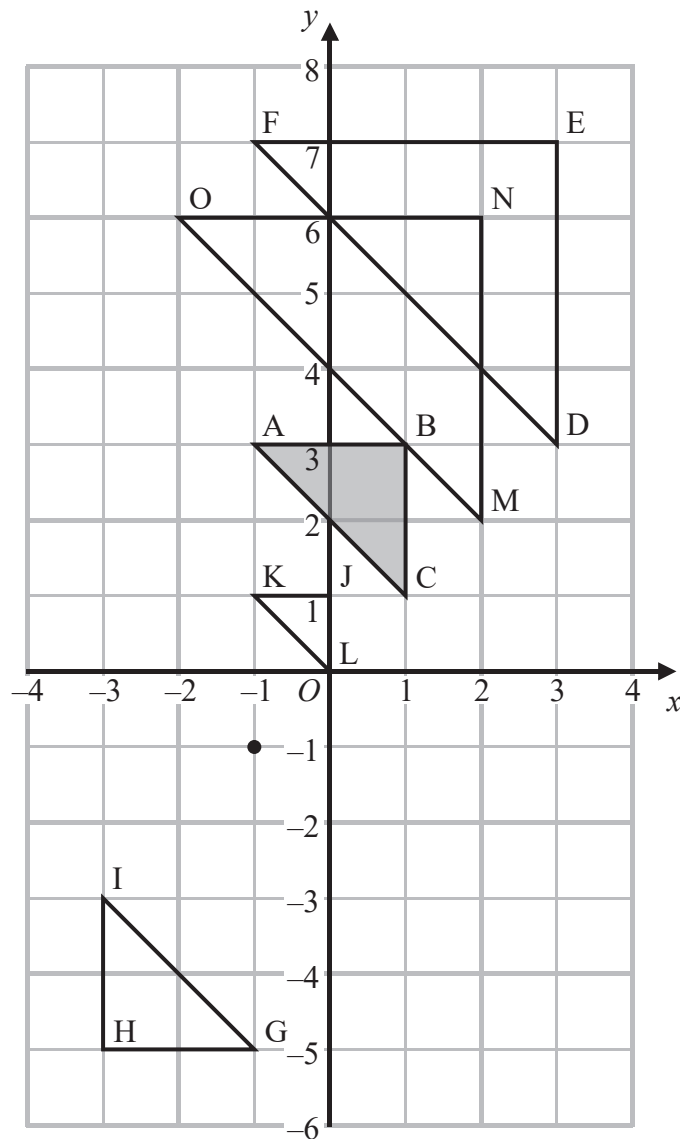| 9.6	60	114	375
☒	☒	☒	☒

(Total for Question 12 is 1 mark)

13 Triangle ABC is enlarged by scale factor 2 about the centre (–1, –1).

Which of the shapes represents this enlargement?

Triangle DEF   Triangle GHI   Triangle JKL   Triangle MNO

☒   ☒   ☒   ☒

(Total for Question 13 is 1 mark)

14 Solve the simultaneous equations

$$5a + 2b = 47$$

$$3a + 4b = 45$$

$a = 11, b = 3$	$a = 6, b = 7$	$a = 9, b = 1$	$a = 7, b = 6$
☒	☒	☒	☒

(Total for Question 14 is 1 mark)

15 Six numbers are written on a piece of paper.
The mean of the six numbers is 14
The median of the six numbers is 13
Three of the numbers are 10, 12 and 15

Which of the following could the other three numbers be?

1, 15, 31	11, 13, 18	11, 14, 22	13, 13, 22
☒	☒	☒	☒

(Total for Question 15 is 1 mark)

TOTAL FOR SECTION A IS 15 MARKS

SECTION B

Answer ALL questions.

16 If $3y = 2x + 1$, find the value of x when $y = 7$

$x =$ ....

(Total for Question 16 is 2 marks)

17 (a) After a 15% pay increase, a teacher earns $31 970 per year.

How much did the teacher earn per year before the pay increase?

$ ....
(2)

(b) Another teacher has a monthly salary of $2 000

She spends $943 per month on rent.

Her monthly salary then increases by 15%.

What percentage of her new monthly salary does the teacher spend on rent?

.... %
(3)

(Total for Question 17 is 5 marks)

Turn over ▶

18 The scores of 20 students in a test are shown in the table.

Score	Frequency
13	3
14	5
15	6
16	4
17	2

(a) Complete the bar chart below for the students' scores.
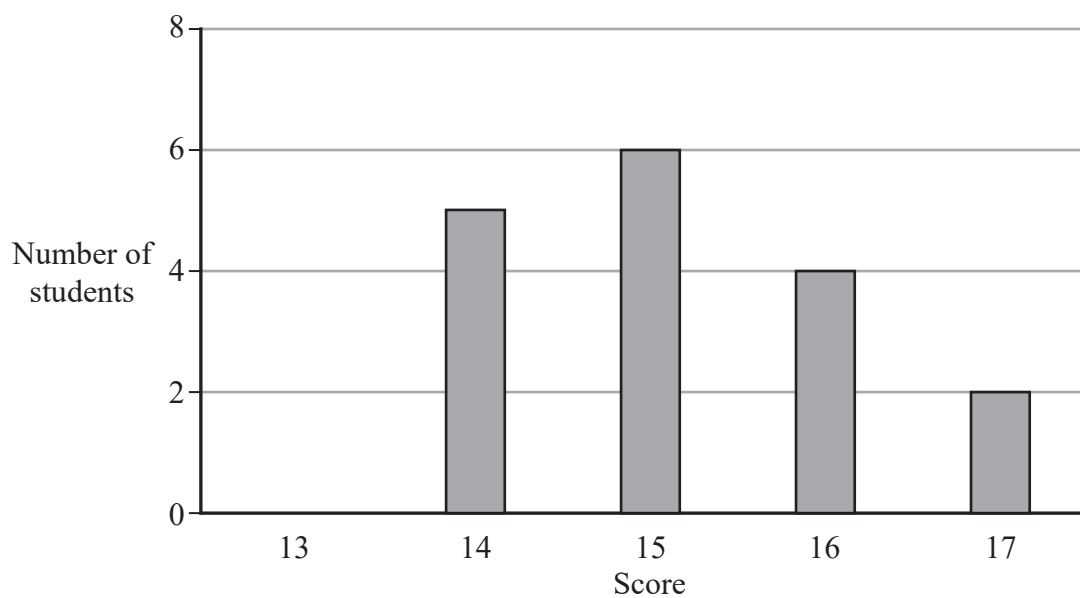
(1)

(b) The students need to score more than 15 to pass the test.

One student is selected at random.

What is the probability that the student selected passed the test?

....

(2)

(Total for Question 18 is 3 marks)

19 Write 150 as a product of its prime factors.

....

(Total for Question 19 is 2 marks)

20 Find the nth term of the sequence

$$1, \ 8, \ 15, \ 22, \ 29, \ \dots$$

....

(Total for Question 20 is 2 marks)

21 Adil, Ben and Carl have $12 each.

Adil spends $7.05 of his $12

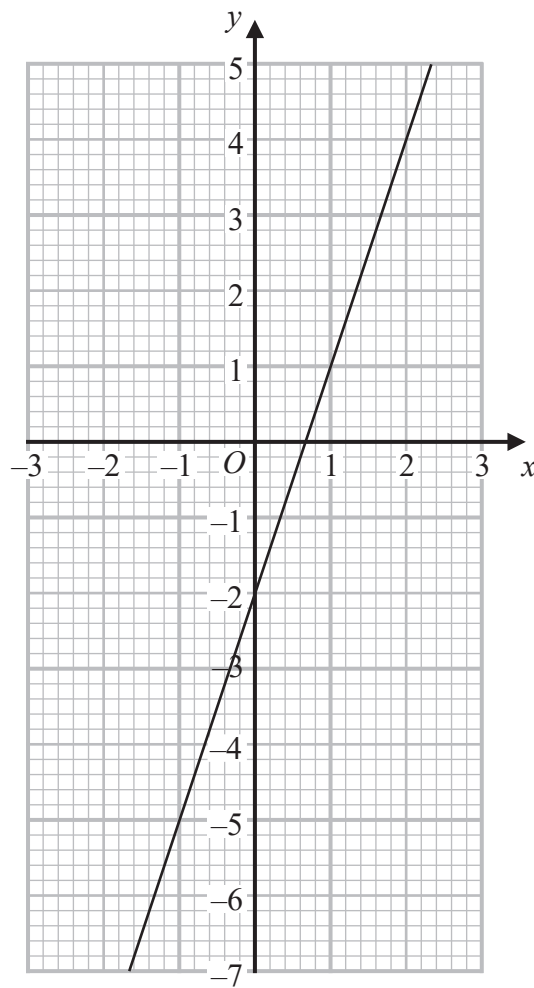Ben spends $\dfrac{3}{5}$ of his $12

Carl spends 58% of his $12

Who has the most money left?

You must show all your working.

....

(Total for Question 21 is 3 marks)

Turn over ▶

22 What is the equation of this straight line graph?

....

(Total for Question 22 is 2 marks)

23 There are 3 boys and 2 girls in a group.

The boys are called Piotr, Quentin and Ravi.

The girls are called Serena and Tabassum.

Two people will be selected to represent the group at a meeting.

(a) Piotr suggests that one boy and one girl should be selected at random to represent the group.

List all the possible outcomes that could occur by using Piotr's method.

....

....

(2)

(b) Serena suggests that the two people with the best average test score should be selected to represent the group.

The test scores for each person in the group are shown in the table.

	Piotr	**Quentin**	**Ravi**	**Serena**	**Tabassum**
Test 1	36	45	42	51	
Test 2	44		26	17	40
Test 3	27	19		35	33

Which two people should be chosen using Serena's suggestion?

....

(3)

(Total for Question 23 is 5 marks)

Turn over ▶

24 Triangles ABC and DEF are similar.

Calculate the length of EF.
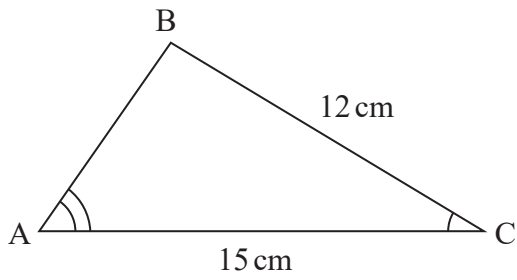
Diagram NOT
accurately drawn

B

12 cm

A

15 cm

C

E

D

50 cm

F
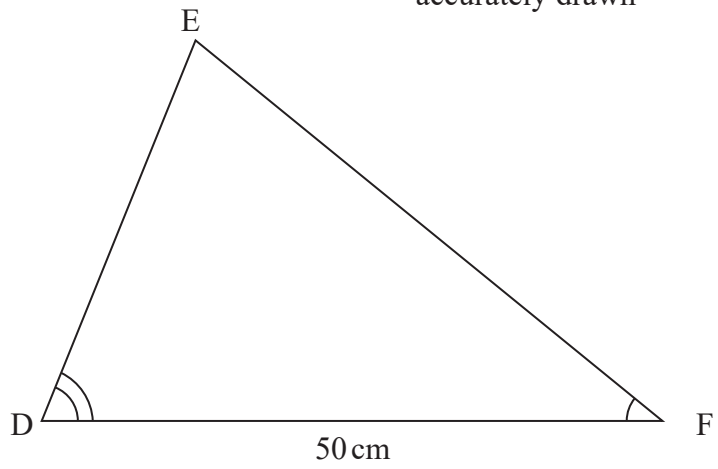
.... cm

(Total for Question 24 is 2 marks)

25 (a) Expand and fully simplify

$$3(4h + 5) + 2h(6h - 7)$$

....
(2)

(b) Solve

$$2m + 5 = 6m - 4$$

$m = $ ....
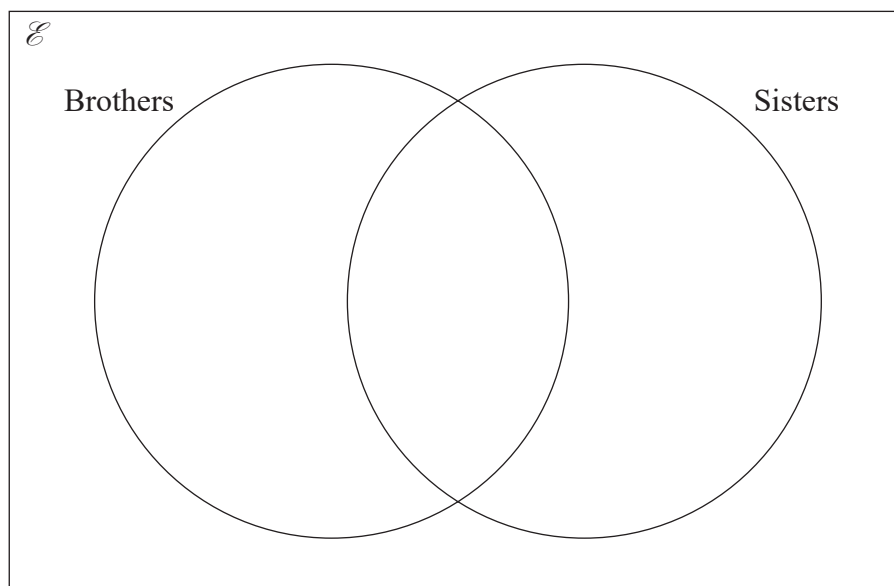(2)

(Total for Question 25 is 4 marks)

26 There are 32 students in a class.

15 of the students have a brother.

20 of the students have a sister.

8 of the students have neither a brother nor a sister.

(a) Use this information to complete the Venn diagram.

(2)

(b) One student is chosen from the class above at random.

What is the probability that the student chosen has a brother and a sister?

....

(1)

(Total for Question 26 is 3 marks)

27 A metal cuboid has length 8 cm, width 6 cm and height 10 cm.

(a) What is the surface area of the metal cuboid?

.... cm²

(2)

(b) The mass of the metal cuboid is 720 grams.

What is the density of the metal?

.... g/cm³

(2)

(Total for Question 27 is 4 marks)

28 (a) Write down the value of the following

(i) 15^0

....

(1)

(ii) 10^{-2}

....

(1)

(b) Write 453.8×10^4 in standard form.

....

(1)

A container holds 1.8×10^5 plastic cups.
Each cup weighs 1.2×10^{-2} kilograms.

(c) What is the total weight of all the cups?
Give your answer in standard form.

.... kilograms

(2)

(Total for Question 28 is 5 marks)

29 A wheel has diameter 50 cm.

What is the least number of times that the wheel needs to turn to travel 100 m?

....

(Total for Question 29 is 2 marks)

30 Write 2.3535353535… as an improper fraction.

You must show all your working.

....

(Total for Question 30 is 2 marks)

31 (a) List all integers that satisfy the inequality

$$-2 \leqslant x < 4$$

....

(1)

(b) Solve

$$3x - 7 > 13$$

....

(2)

(c) Solve

$$x^2 + 7x - 18 = 0$$

$x =$ ....

(3)

(d) Solve

$$\frac{3x + 5}{6} = \frac{2x - 4}{5}$$

$x =$ ....
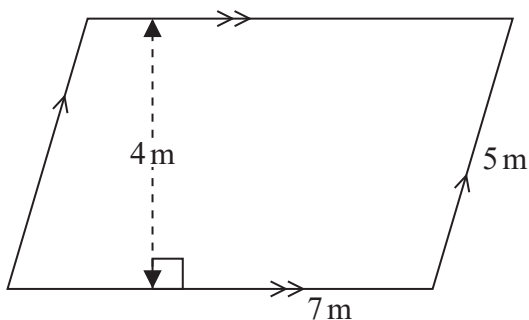
(3)

(Total for Question 31 is 9 marks)

32 The area of the parallelogram and the area of the trapezium are equal.

Calculate the length of the side marked b in the trapezium?

.... m
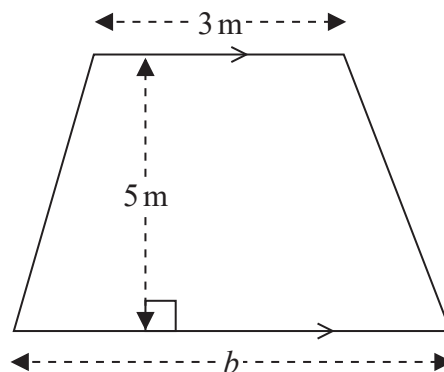
(Total for Question 32 is 4 marks)

33 How much longer is QR than ST?

Give your answer correct to 3 significant figures.

Q

S

124 mm

73°

P   R   T   U
28 mm   85 mm

.... mm
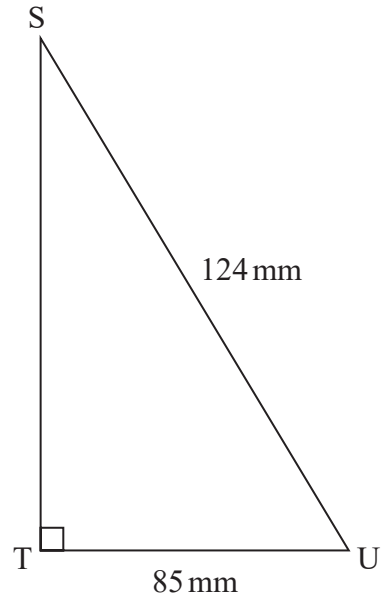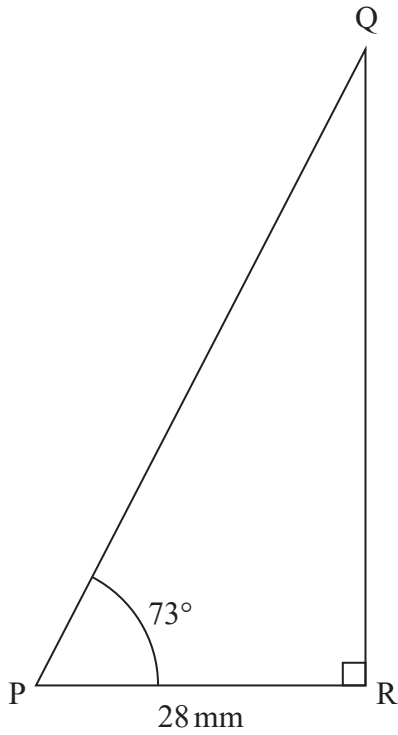
(Total for Question 33 is 6 marks)

TOTAL FOR SECTION B IS 65 MARKS
TOTAL FOR PAPER IS 80 MARKS

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