Write your name here

Surname	Other Names

Mathematics

Paper 1 (Non-Calculator)
Foundation Tier

Time: 1 hour 30 minutes

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

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

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

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium = $\frac{1}{2}(a + b)\, h$

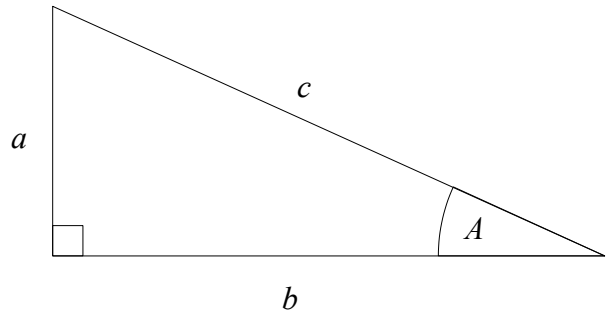
Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \qquad \cos A = \frac{b}{c} \qquad \tan A = \frac{a}{b}$$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued = $P\left(1 + \frac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P (A or B) = P (A) + P (B) – P (A and B)

END OF EXAM AID

1 Write 0.7 as a percentage.

..... %

(Total for Question 1 is 1 mark)

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2 Work out $6 + 12 \div 3$

.....

(Total for Question 2 is 1 mark)

---

3 Write down a multiple of 7 that is between 20 and 30

.....

(Total for Question 3 is 1 mark)

---

4 Work out $400 + 139$

.....

(Total for Question 4 is 1 mark)

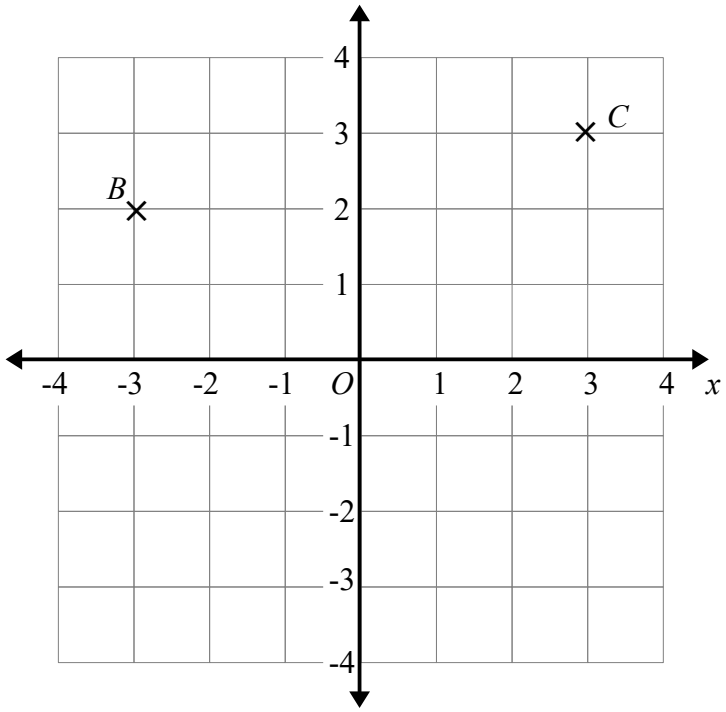
---

5 Work out $\frac{1}{6}$ of 300

.....

(Total for Question 5 is 1 mark)

6



(a) Plot the point with coordinates (2, -1)
Label this point *A*.

(1)

(b) Write down the coordinates of the midpoint of *BC*.

(..... , ...)

(1)

(Total for Question 6 is 2 marks)

---

7 Tommy buys

4 drinks for £1.45 each
2 identical cakes.

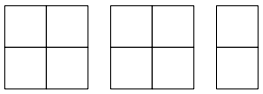
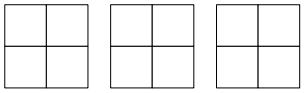
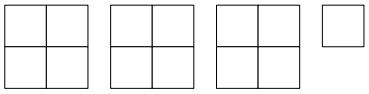
Tommy pays with a £10 note.
He gets £1.60 change.

How much does Tommy pay for each cake?

£ .....

(Total for Question 7 is 4 marks)

8 The pictogram shows information about the number of books sold by an author in January, February and March.

January	
February	
March	
April	

Key:

 represents 8 books

(a) Write down the number of books sold in March

.....

(1)

14 books were sold in April.

(b) Show this information on the pictogram. **(1)**

(c) What was the total number of books sold in these four months?

.....

(2)

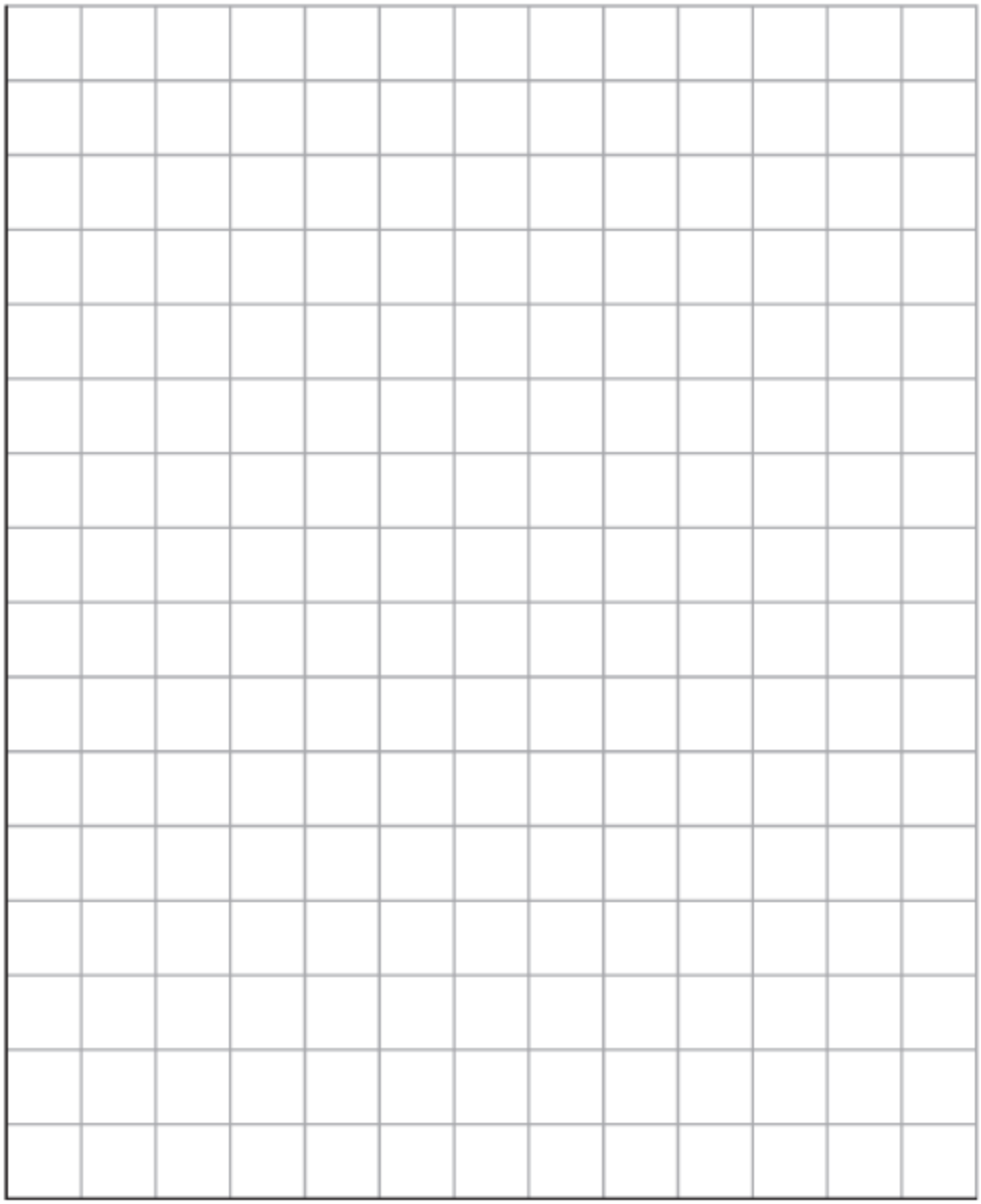
(Total for Question 8 is 4 marks)

9 20 students in each of year 7 and year 8 were asked how about their favourite biscuits.

The table gives information about the results.

	Digestive	**Custard Cream**	**Shortbread**
Year 7	5	7	8
Year 8	4	9	7

On the grid, draw a suitable diagram or chart for this information.

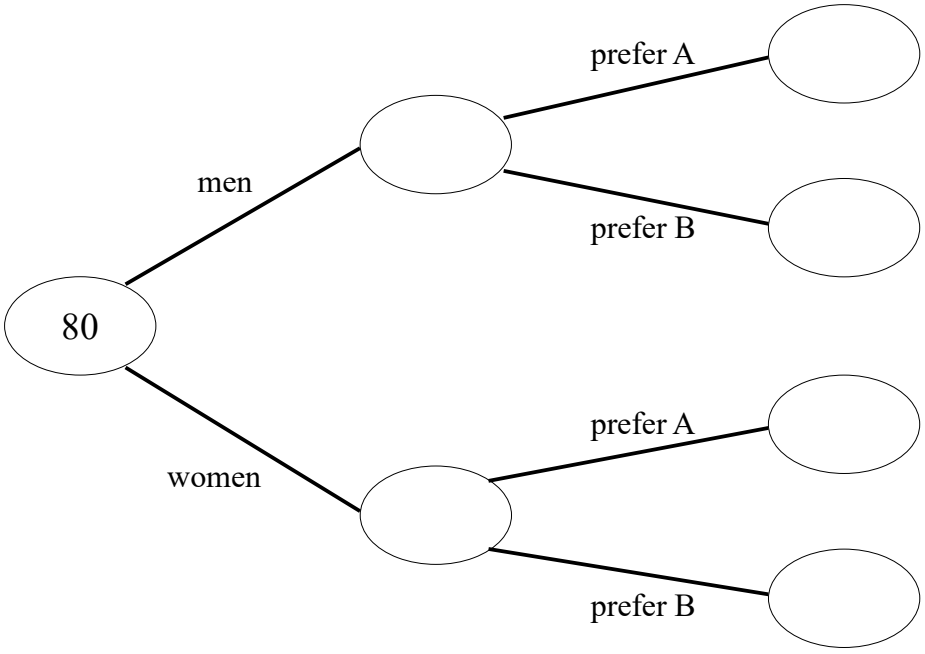


(Total for Question 9 is 4 marks)

10 Caleb makes a cola drink.
He is doing a taste test.
He asks 80 people if they prefer cola A or cola B.

41 of the people are men.
22 of the 50 people that prefer cola A are women.

(a) Use this information to complete the frequency tree.



(3)

One of the people who prefer cola B is chosen at random.

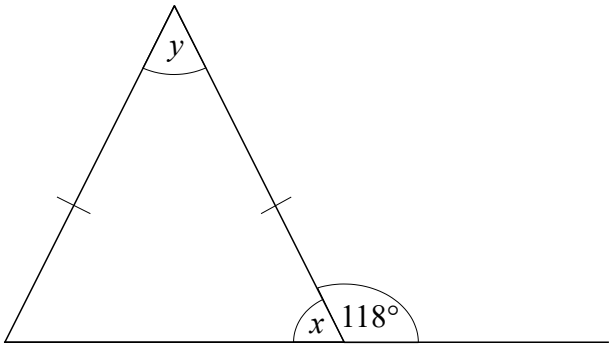
(b) Find the probability that this person is a woman.

.....

(2)

(Total for Question 10 is 5 marks)

11



(a) Work out the size of the angle marked x.

.....°

(1)

(b) Work out the size of the angle marked y.

.....°

(1)

(c) Give reasons for your answer.

.....

.....

(1)

(Total for Question 11 is 3 marks)

---

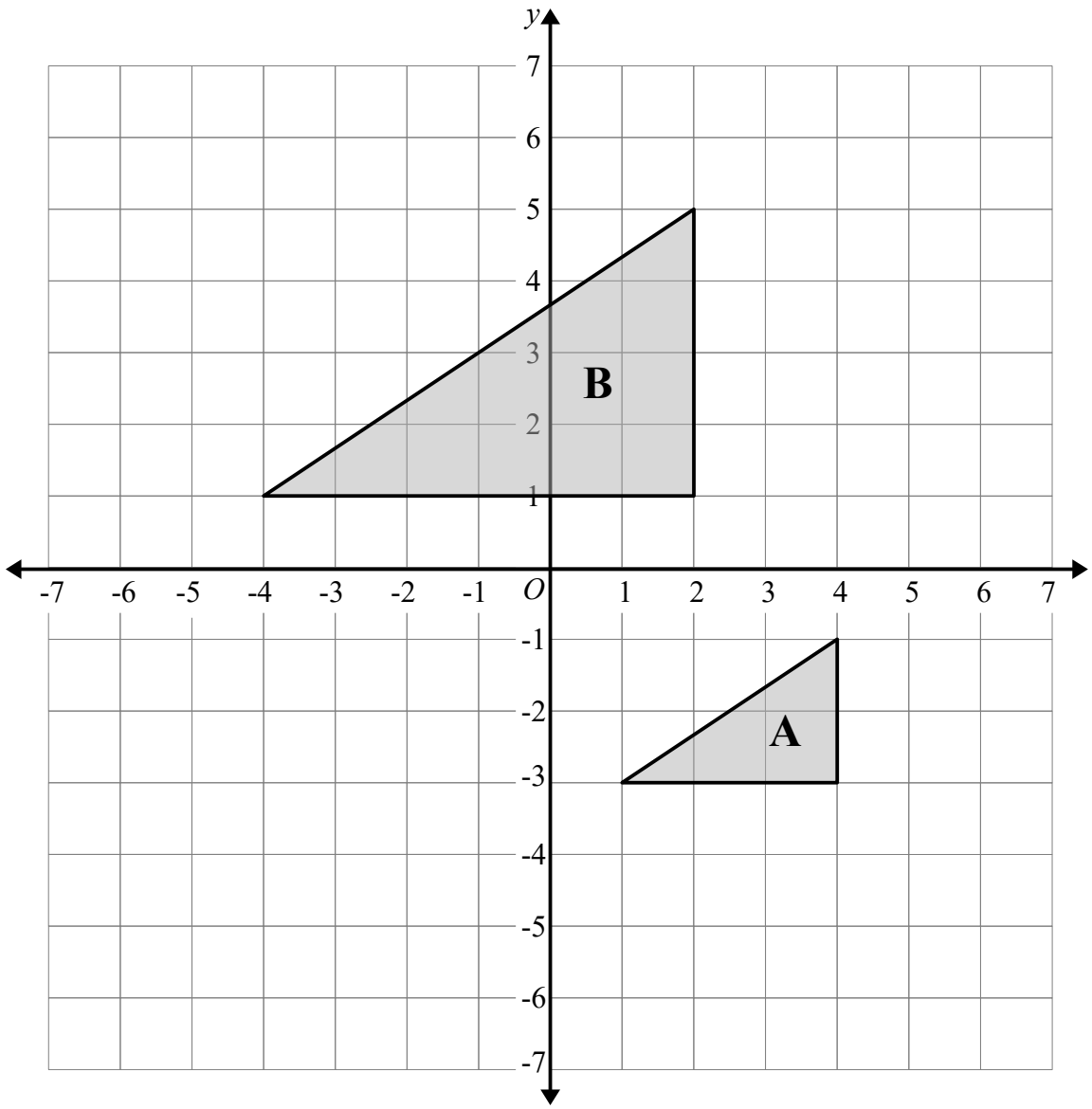
12 There are 28 red counters and 42 blue counters in a bag.

Write as a ratio the number of red counters to the number of blue counters.
Give your ratio in its simplest form.

.....

(Total for Question 12 is 2 marks)

13



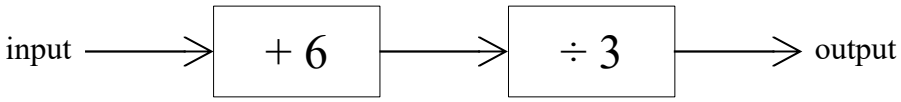
Describe fully the single transformation that maps triangle **A** on triangle **B**.

.....

.....

(Total for Question 13 is 2 marks)

14 Here is a number machine.

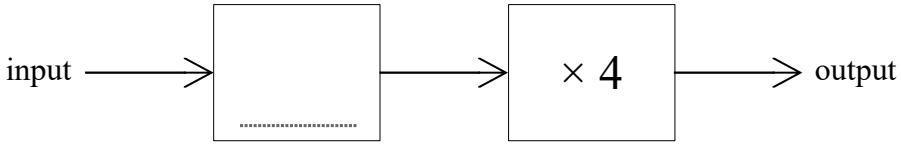


(a) Work out the output when the input is 15

.....

(1)

Here is a different number machine.
The number machine is not complete.



When the input is 6, the output is 44

(b) Complete this number machine. **(2)**

(Total for Question 14 is 3 marks)

15 $P = 4x + 3y$

$x = 3$
$y = -2$

(a) Work out the value of P.

.....

(2)

(b) Expand $3(a + b)$

.....

(1)

(c) Solve $5(x - 6) = 45$

$x =$ .....

(2)

(Total for Question 15 is 5 marks)

---

16 Here is the list of ingredients for making 20 muffins.

Ingredients for 20 muffins
400g Flour
250g Sugar
150g Butter

Gary wants to make 50 muffins.
How much sugar does Gary need?

..... g

(Total for Question 16 is 2 marks)

17 Selena takes an exam.
The exam is out of 60 marks.

Selena needs to score at least 80% of the marks to pass the exam.
She scores 50 marks.

Show that Selena passes the exam

(Total for Question 17 is 2 marks)

---

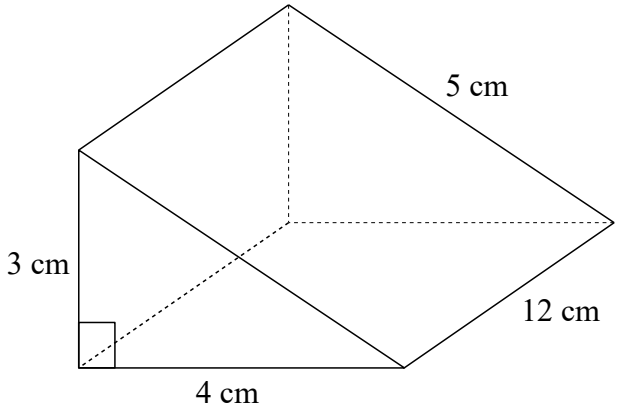
18 3 kg of potatoes cost £2.25
2 kg of potatoes and 4 kg of onions cost £5.10

Work out the cost of 1kg of onions and 4 kg of potatoes.

£ .....

(Total for Question 18 is 4 marks)

19 The diagram shows a triangular prism.

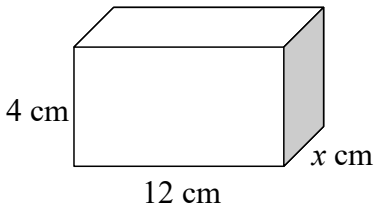


(a) Find the total surface area of the triangular prism.

.....cm^2

(3)

Here is a cuboid.



The volume of the cuboid is 120 cm^3

(b) Calculate the value of x

.....

(2)

(Total for Question 19 is 5 marks)

20 Work out $6.84 \div 0.12$

.....

(Total for Question 20 is 3 marks)

21 A plane travels at a speed of 298 miles per hour.

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

..... seconds

(3)

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

.....

.....

(1)

(Total for Question 21 is 4 marks)

22 Simon writes down three numbers a, b and c

$$a : b = 2 : 3$$
$$b : c = 5 : 4$$

(a) Find $a : b : c$

.....

(2)

Alvin writes down three numbers d, e and f

$$d = 3e$$
$$e = 4f$$

(b) Find $d : f$

.....

(2)

(Total for Question 22 is 4 marks)

23 (a) Work out $2\frac{3}{4} + 3\frac{1}{3}$

Give your answer as a mixed number.

.....

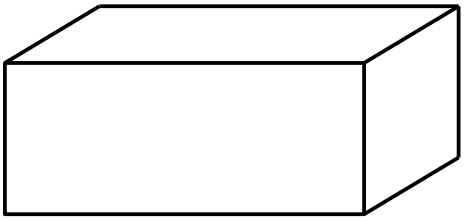
(2)

(b) Show that $1\frac{3}{5} \div 6 = \frac{4}{15}$

(2)

(Total for Question 23 is 4 marks)

24



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A large box exerts a force of 900 newtons on the ground.

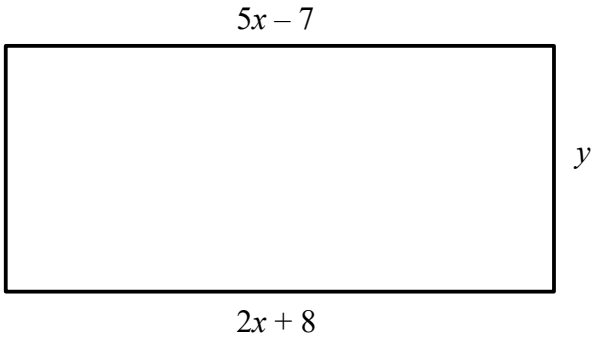
The base of the box in contact with the ground is a 3 m by 2 m rectangle.

Work out the pressure on the ground due to the box.

..... newtons/m^2

(Total for Question 24 is 2 marks)

25 Here is a rectangle.



All measurements are in centimetres.

The area of the rectangle is 36 cm^2.

Find the value of y

.....

(Total for Question 25 is 4 marks)

26 Adam, Billy and Charlie share £360 in the ratio 4 : 3 : 2
How much money does Billy get?

£ .....

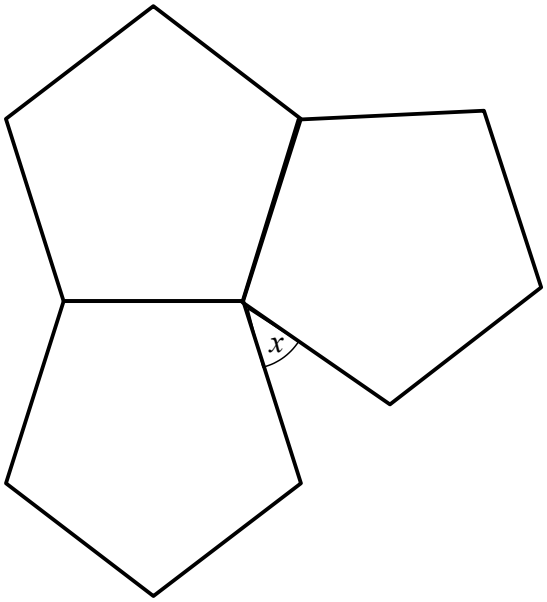
(Total for Question 26 is 2 marks)

27 The equation of the line L_1 is $y = 3x + 5$
The equation of the line L_2 is $2y - 6x + 4 = 0$

Show that these two lines are parallel.

(Total for Question 27 is 2 marks)

28



The diagram shows three regular pentagons meeting at a point.

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

°

.....

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS