Candidate Name	Centre Number	Candidate Number

WELSH JOINT EDUCATION COMMITTEE

General Certificate of Secondary Education

WJEC CBAC

CYD-BWYLLGOR ADDYSG CYMRU

Tystysgrif Gyffredinol Addysg Uwchradd

185/01

SOLUTIONS

MATHEMATICS

PILOT EXAMINATION

FOUNDATION TIER PAPER 1

P.M. MONDAY, 5 June 2006

(2 Hours)

CALCULATORS ARE NOT TO BE USED FOR THIS PAPER

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	6	
2	4	
3	5	
4	6	
5	8	
6	4	
7	3	
8	4	
9	8	
10	8	
11	13	
12	3	
13	3	
14	4	
15	3	
16	7	
17	4	
18	5	
19	2	
TOTAL MARK		

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

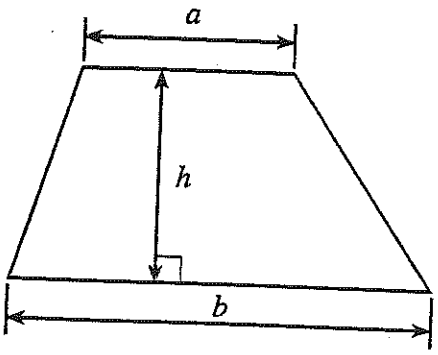
Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

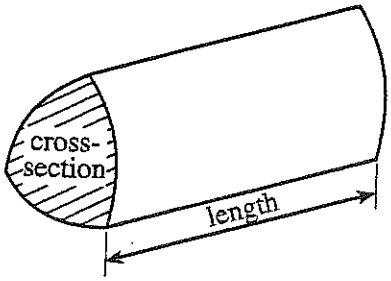
No certificate will be awarded to a candidate detected in any unfair practice during the examination.

Formula List

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



Volume of prism = area of cross-section × length



1. *(a)* Write the following numbers in order of size, starting with the smallest.

212 202 22 12 122 221 102

12, 22, 102, 122, 202, 212, 221

[1]

(b) Write down

(i) the sum of 37 and 74,

111

(ii) the answer when you subtract 46 from 80,

34

(iii) the answer to 9 multiplied by 8,

72

(iv) the answer when 96 is divided by 12.

8

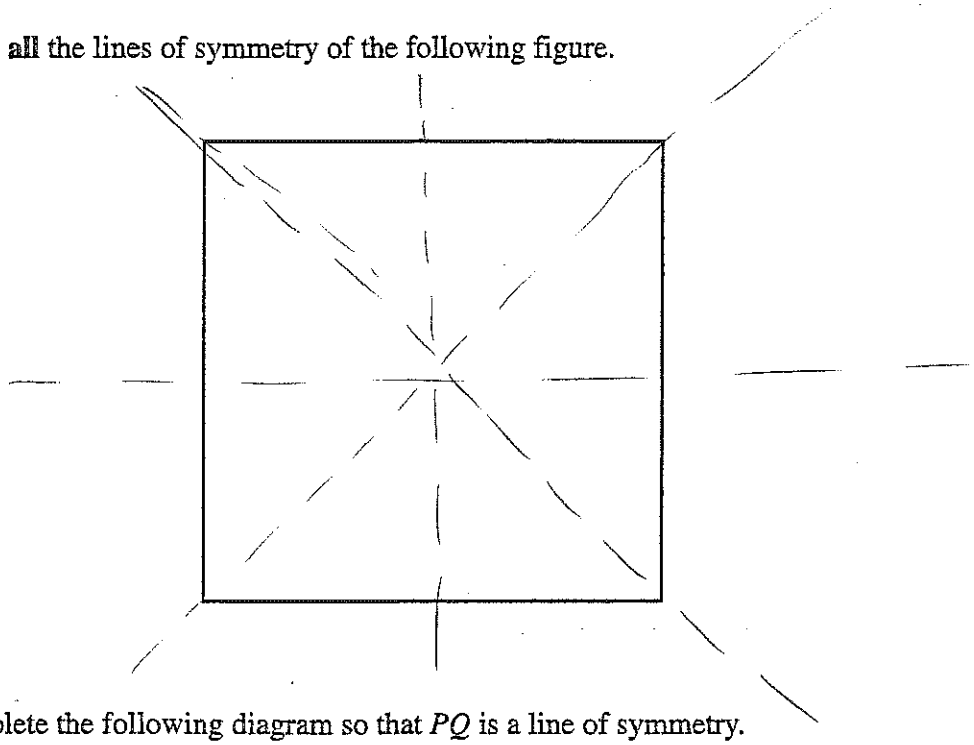
[4]

(c) A house costs one hundred and fifteen thousand seven hundred and fifty pounds. Write this amount in figures.

£ 115750

[1]

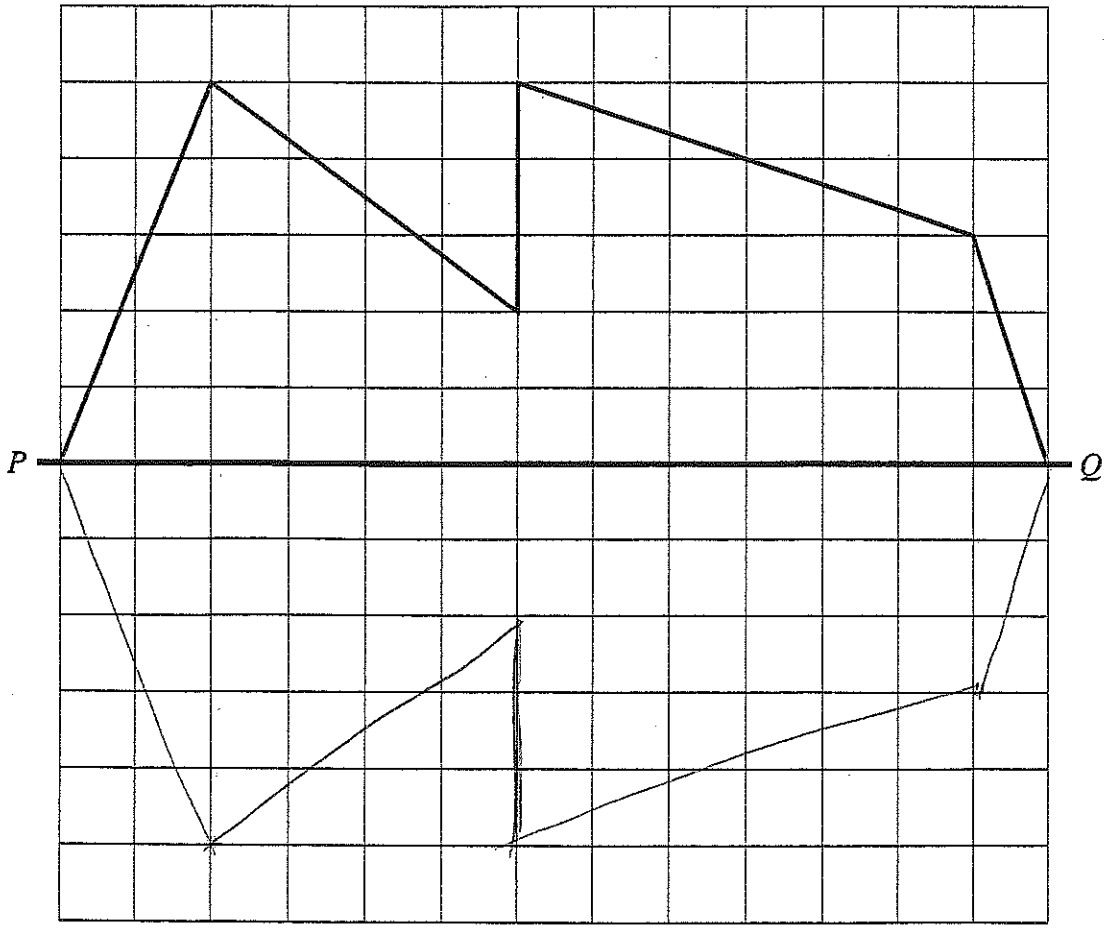
2. *(a)* Draw **all** the lines of symmetry of the following figure.



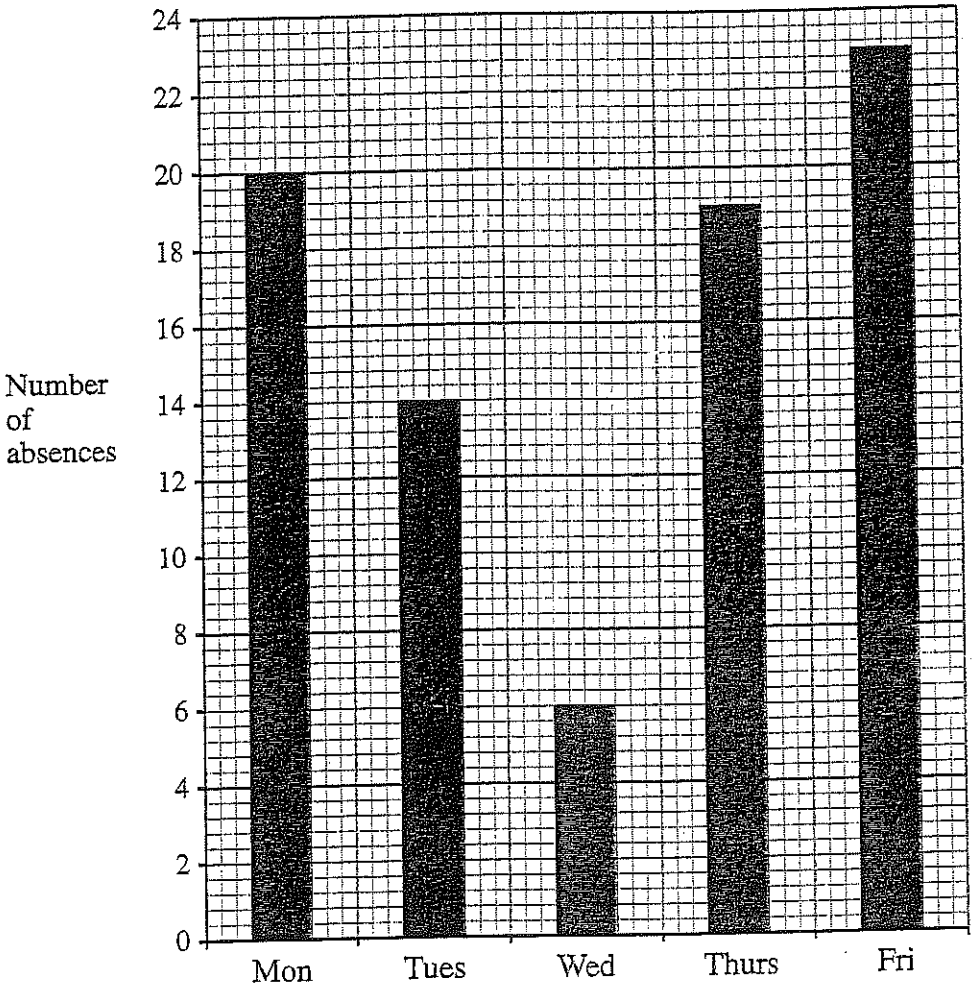
[2]

(b) Complete the following diagram so that PQ is a line of symmetry.

[2]



3. The diagram shows the numbers of pupils absent from school during one week.



(a) On which day was the greatest number of pupils absent?

FRI

[1]

(b) How many absences were there on Thursday?

19

[1]

(c) On which days were there less than 16 pupils absent?

TUES + WED

[1]

(d) Find the total number of absences for the week.

20 + 14 + 6 + 19 + 23

= 82

[2]

4. *(a)* Write down the next term of **each** of the following sequences.

[2]

(i) 4, 9, 14, 19, 24

(ii) 23, 20, 17, 14, 11

(b) A company uses the following formula to work out the charge, in pounds, for repairing gas boilers.

Charge = Number of hours worked × 8 + 45

(i) Calculate the **Charge** when the **Number of hours worked** is 4.

$(4 \times 8) + 45$

$= 32 + 45$

$= £77$

(ii) Calculate the **Number of hours worked** when the **Charge** is 61 pounds.

$61 = (x \times 8) + 45$

$61 - 45 = 8x$

$16 = 8x$

$2 = x$

[4]

5. *(a)* Using the following numbers,

25 32 49 17 21 45 14

write down

(i) the value of 7^2, 49

(ii) a prime number, 17

(iii) a factor of 64. 32

[3]

(b) Find 20% of £60.

10% = £6

20% = 2×6 = £12

[2]

(c) (i) Write

$\frac{3}{4}$ as a decimal, 0·75

60% as a decimal. 0·6

(ii) Write $\frac{3}{4}$, 60% and 0·7 in order of size, with the smallest first.

60%, 0·7, 3/4

[3]

6. While on holiday at an hotel a number of holiday makers compared the price they paid. The prices were:

£125, £120, £130, £125, £145, £125, £134, £155, £130.

For these prices, write down the mode, the median and the range.

120, 125, 125, 125, 130, 130, 134, 145, 155

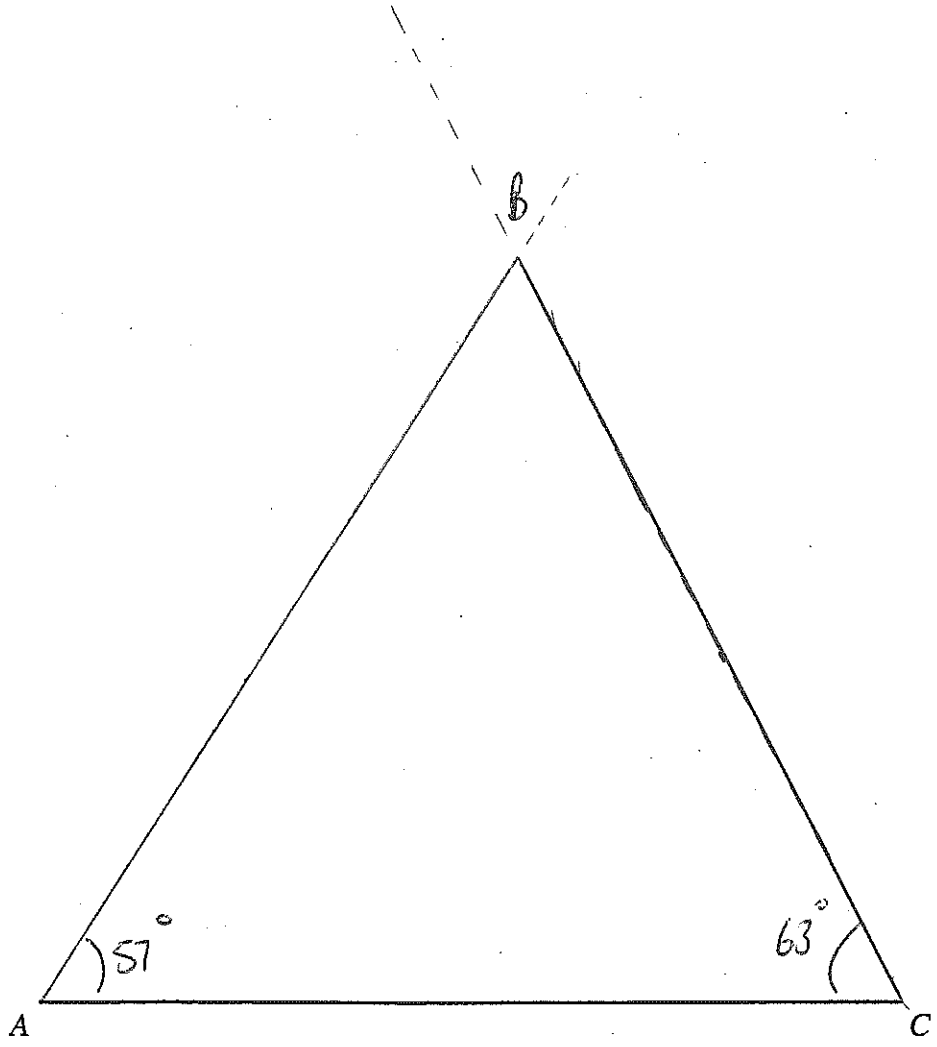
The mode = £125

The median = £130

The range = £36 (155 − 120)

[4]

7. Make an accurate drawing of triangle ABC in which $AC = 11{\cdot}3$ cm, $C\hat{A}B = 57°$ and $A\hat{C}B = 63°$. The line AC has been drawn for you.



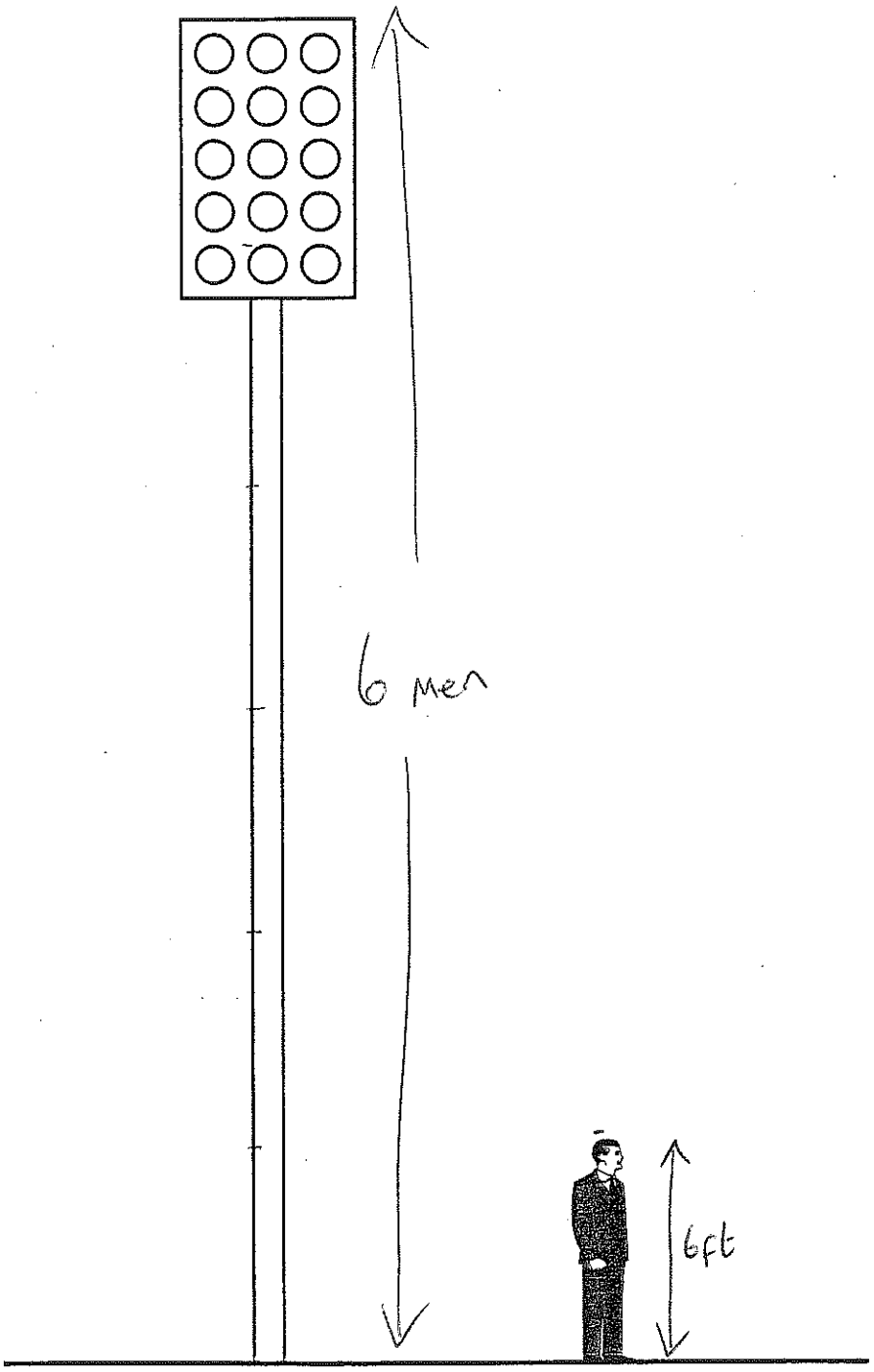
Measure and record the length of AB.

Length of AB = 11·4 cm

[3]

BLANK PAGE

8.



The diagram opposite, which is drawn to scale, shows a man standing at the side of a floodlight tower at a football ground.
Estimate the height of the man and hence find an estimate for the height of the floodlight tower.
Show all your working.

Estimated height of the man = 6ft or 2m

Estimated height of the floodlight tower = 6 x 6ft 6 x 2m
= 36ft = 12m

[4]

9. *(a)* Find the value of the angles marked x and y.

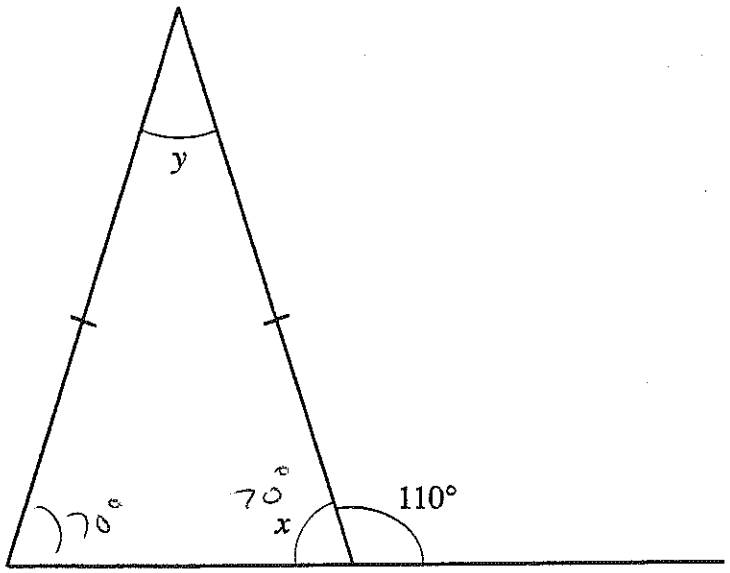


Diagram not drawn to scale.

$x =$ 70° $y =$ 40° [3]

(b) Find the value of the angle marked t.

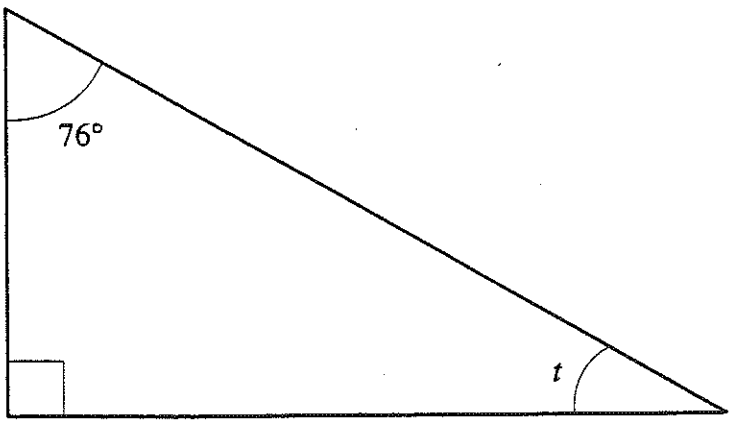


Diagram not drawn to scale.

180 − 76 − 90

$t =$ 14° [2]

(c) Find the value of the angle marked p.

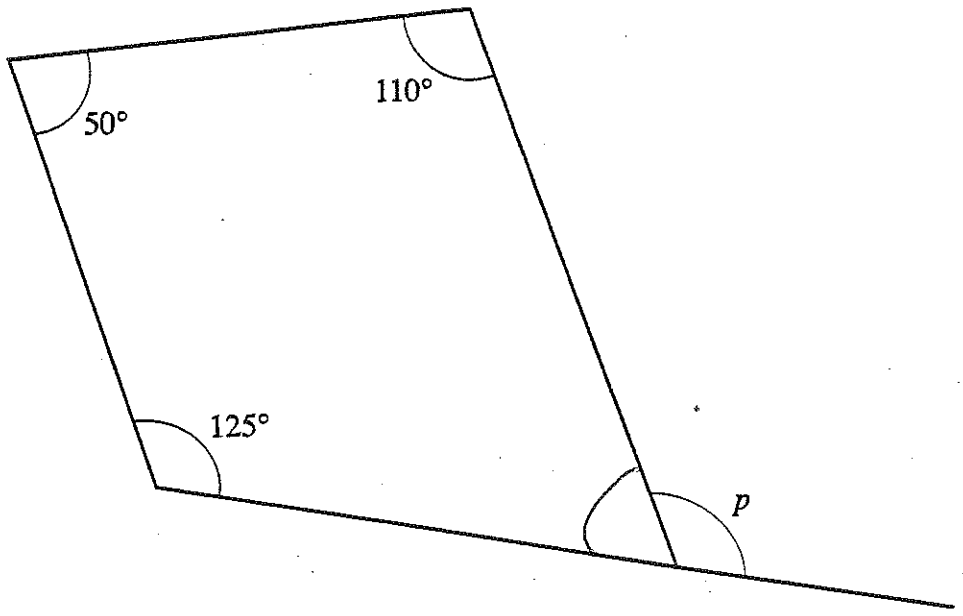


Diagram not drawn to scale.

$360 - 110 - 125 - 50 = 75°$

$180 - 75$

$p =$ 105 °

[3]

10. *(a)* Andrew bought four ice cream cones costing 86p each.
He paid using a £5 note.
How much change should he be given?

86
× 4
344

∴ 500 − 344
£1.56

[2]

(b) Mary bought a tennis ball costing £2.25 and a shuttlecock costing £1.28.
She used a £10 note to pay for these items.
How much change should Mary be given?

2.25
+1.28
3.53

∴ 10.00 − 3.53
£6.47

[2]

(c) Sam bought eight trees for his garden.
Each tree cost £17.
Calculate the total cost of the trees.

17
× 8
£136

[2]

(d) Sian has 217 counters. She divides the counters into 7 equal piles.
How many counters are there in each pile?

31
7 | 217

[2]

11. *(a)* Solve **each** of the following equations.

(i) $x - 7 = 16$

$x = 16 + 7$

$x = 23$

(ii) $\frac{x}{4} = 6$

$x = 6 \times 4$

$x = 24$

(iii) $3x + 2 = 8$

$3x = 8 - 2$

$3x = 6$

$x = 2$

[4]

(b) Simplify **each** of the following expressions.

(i) $2y + 5y + 4y$

$11y$

(ii) $6r + 5s - 5r$

$r + 5s$

(iii) $7d - 5c - 2d - 6c$

$5d - 11c$

[4]

(c) (i) Find the value of $4s + 7t$ when $s = -3$ and $t = 2$.

$4(-3) + 7(2)$

$= -12 + 14$

$= 2$

(ii) Use the formula $W = 5x - 3y$ to find the value of W when $x = 4$ and $y = -4$.

$5(4) - 3(-4)$

$= 20 + 12$

$= 32$

[4]

(d) Factorise $3x + 15$.

$3(x + 5)$

[1]

12. The table below gives some of the values of $y = x - 3$ for values of x from -3 to 2.

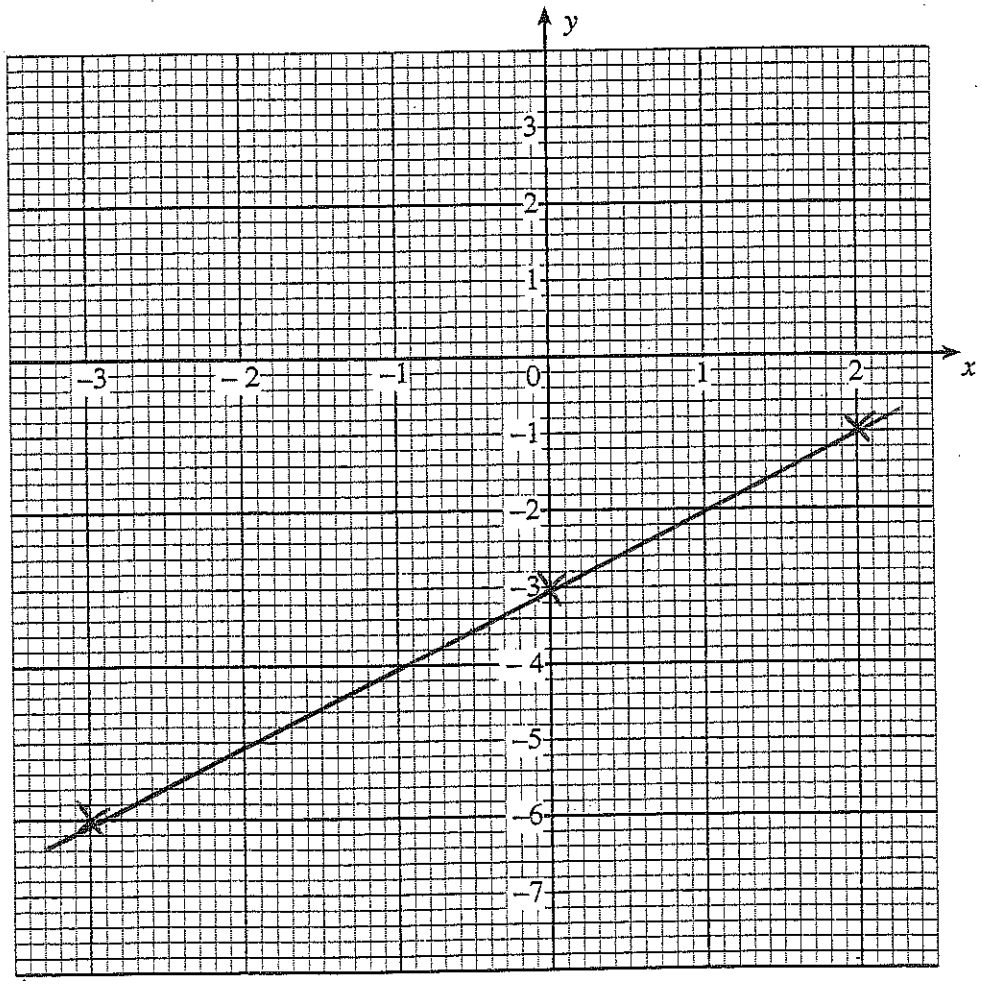
(a) Complete the table by finding the value of y when $x = 2$.

[1]

x	-3	0	2
y	-6	-3	-1

(b) On the graph paper below, draw the graph of the straight line $y = x - 3$ for values of x from -3 to 2.

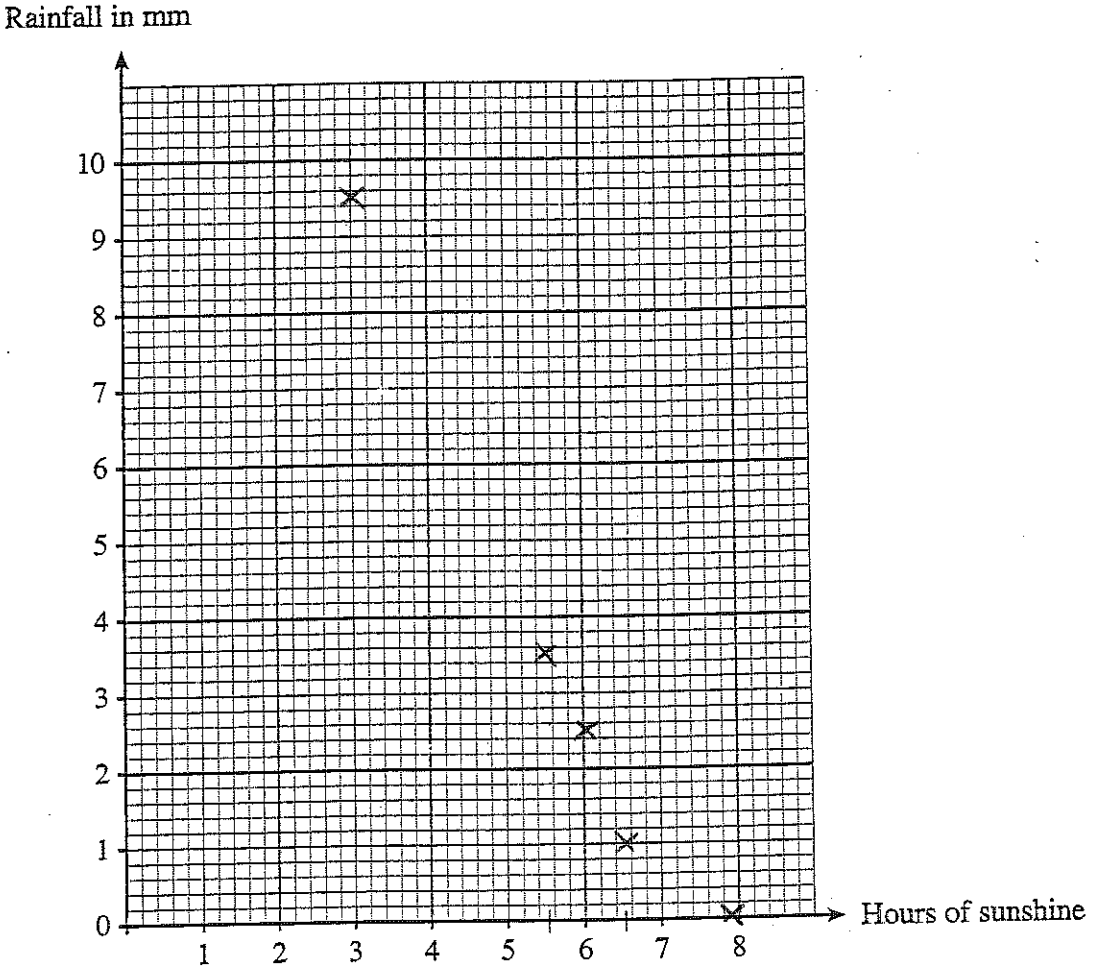
[2]



13. The number of millimetres of rainfall and number of hours of sunshine are recorded by a group of students every Monday for 5 weeks. The table below shows the results.

Number of hours of sunshine	5·5	6·5	6·0	7·9	3·0
Millimetres of rainfall	3·5	1·0	2·5	0·0	9·5

(a) On the graph paper below draw a scatter diagram of these results. [2]

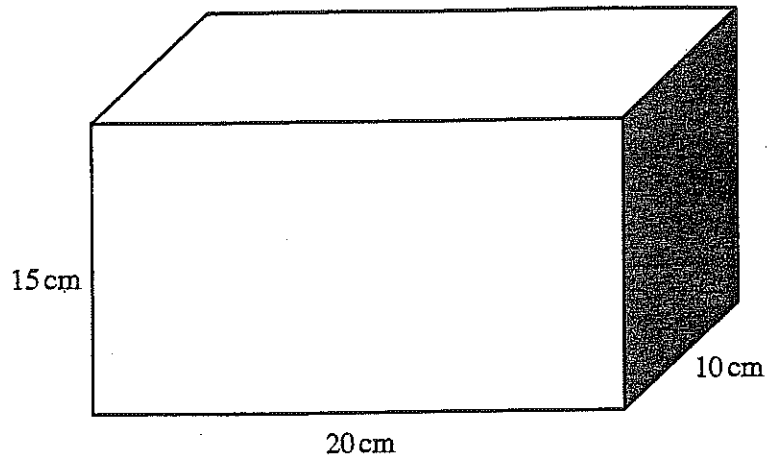


(b) Describe the correlation between the number of hours of sunshine and the amount of rainfall.

NEGATIVE .

..... [1]

14. *(a)*



A rectangular container, full of water, measures 20 cm by 15 cm by 10 cm.
Calculate the volume of water in the container.

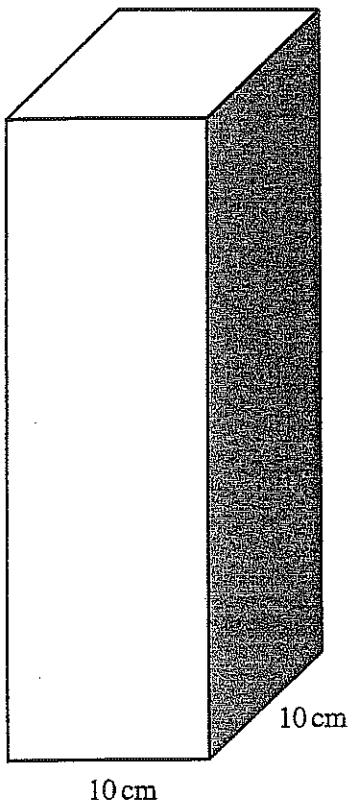
$20 \times 15 \times 10$

$3000\ cm^3$

$= 3$ litres

[2]

(b) All of the water is poured into a second container with a square base of side 10 cm.



Calculate the depth of the water in this container.

3000 = 10 x 10 x h

30 cm = h

[2]

15. The diagram shows a right-angled triangle ABC with $AB = 5$ cm, $AC = 6$ cm and $B\hat{A}C = 90°$.

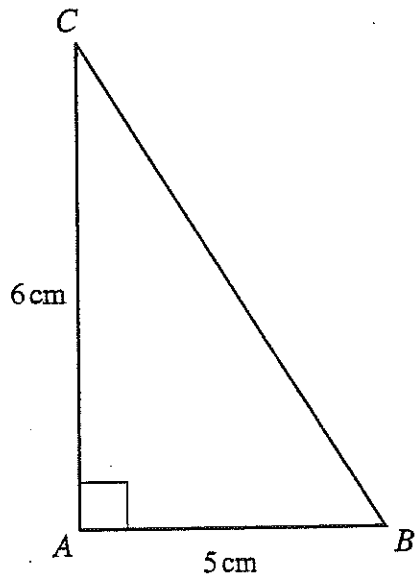


Diagram not drawn to scale.

Find the area of the triangle ABC, clearly stating the units of your answer.

$A = \frac{bh}{2}$

$A = \frac{5 \times 6}{2} = 15 \text{ cm}^2$

[3]

16. *(a)* The cost of a stand season ticket last year was £200. This year it has increased by 20%. Find the cost of the stand season ticket this year.

10% = £20

20% = £40

∴ Cost = £240

[3]

(b) Two friends, Nigel and Paul, decide to share the cost of a £100 field season ticket in the ratio 4:1.

(i) How much **each** should each of Nigel and Paul pay towards the cost of the ticket?

5 parts = £100

1 part = £20

4 4 parts = £80.

Nigel pays £80 Paul pays £20.

[2]

(ii) In the season there are 45 matches to attend. Nigel suggests that they take it in turns to attend every other match.
Would this be a fair suggestion?
You must explain your answer giving an alternative suggestion if you decide that this would not be a fair method.

Nigel 23 matches

Paul 22 matches.

Cost Not fair.

[2]

17. *(a)* Express 360 as a product of prime numbers in index form.

360
2 180
2 90
2 45
5 9
3 3

$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$
$= 2^3 \times 3^2 \times 5$

[3]

(b) Explain why $2^5 \times 3^4$ is **not** a perfect square.

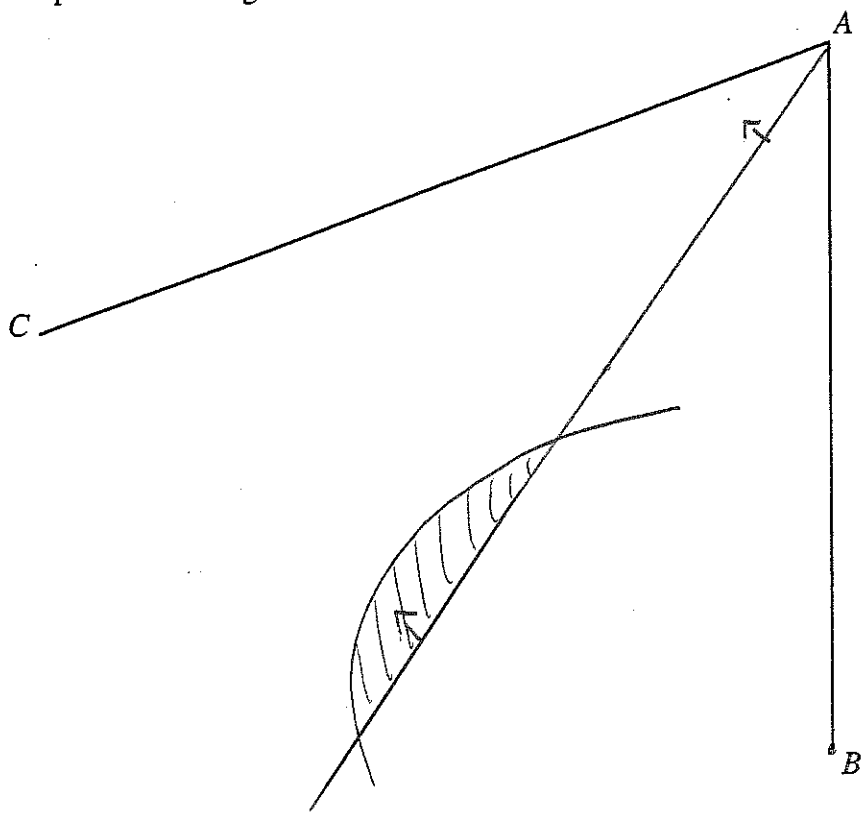
needs to be $2^6 \times 3^4$.

[1]

18. *(a)* The diagram below shows two straight lines *AB* and *AC*.
Find and **shade** the region which satisfies **both** of the following conditions.

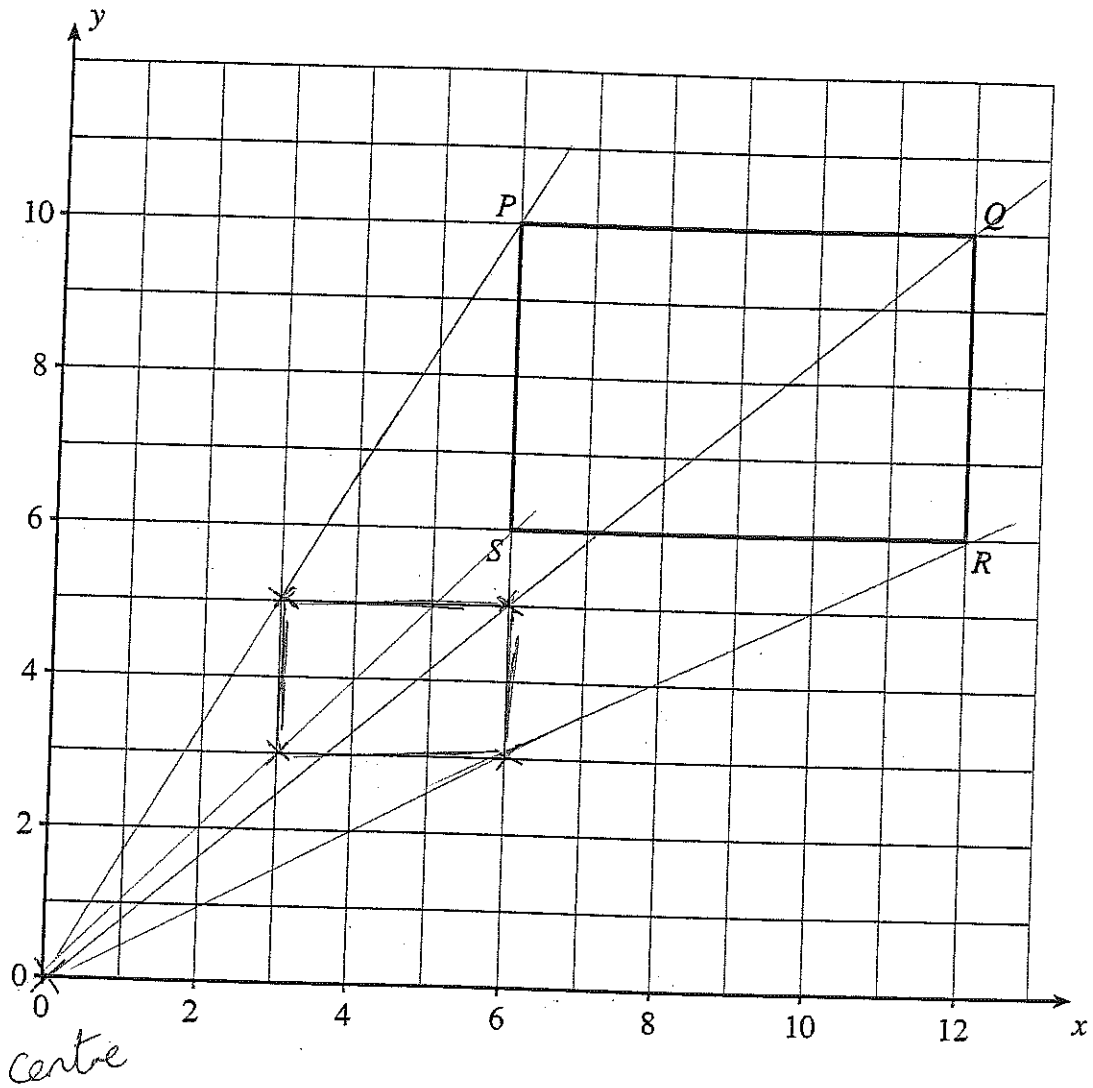
(i) All points in the region are nearer to *AC* than to *AB*.

(ii) All points in the region are less than 6 cm from *B*.

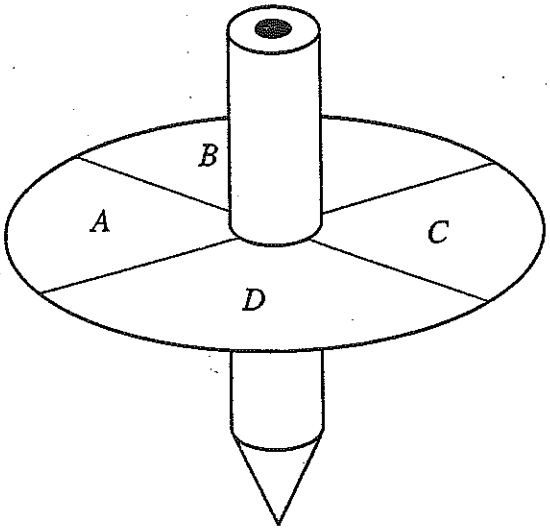


[3]

(b) Enlarge the rectangle $PQRS$ by a scale factor $\frac{1}{2}$ using (0, 0) as the centre of enlargement. [2]



19. A spinner is labelled *A*, *B*, *C* and *D*.



The table shows the probability of the spinner landing on the different letters.

Letter	*A*	*B*	*C*	*D*
Probability	0·18	0·36	0·12	0·34

What is the probability that the spinner lands on the letter *C* or the letter *D*?

0·12 + 0·34

= 0·46

[2]