Candidate Name	Centre Number	Candidate Number
		0

WJEC CBAC

GCSE

185/11

GRADE G F E D C
MARK 20 30 45 57 70

MATHEMATICS

WALES PILOT

FOUNDATION TIER

PAPER 1

A.M. TUESDAY, 9 November 2010

2 hours

CALCULATORS ARE NOT TO BE USED FOR THIS PAPER

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.

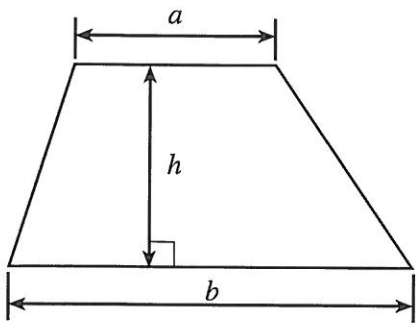
The number of marks is given in brackets at the end of each question or part-question.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1	10	10
2	4	14
3	5	19
4	3	22 ⇒ G
5	5	27
6	7	34 ⇒ F
7	8	42
8	4	46 ⇒ E
9	4	50
10	4	54
11	9	63 ⇒ D
12	4	67
13	5	72 ⇒ C
14	5	
15	3	
16	4	
17	4	
18	5	
19	3	
20	4	
TOTAL MARK		

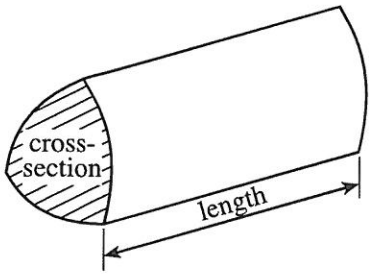
3

Formula List

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



Volume of prism = area of cross-section × length



Examiner only

1. *(a)* (i) Write down, in words, the number 35 276.

Thirty five thousand two hundred and seventy six

(ii) Write down, in figures, the number sixteen thousand three hundred and forty.

16 340

[2]

(b) Using the following list of numbers

28 16 64 52 43 62 42 8

write down

(i) two numbers that add up to 90,

28 & 62

(ii) the number that is the difference between 67 and 24,

43

(iii) a multiple of 6,

42

(iv) the answer when 40 is divided by 5,

8

(v) the square of 8.

64

[5]

(c) Write down a factor of 24 which is between 7 and 11.

8

[1]

(d) Write 7682

(i) correct to the nearest 10,

7680

(ii) correct to the nearest 1000.

8000

[2]

Examiner only

2. Write down the **metric unit** that is **best used** to measure

the weight of ten sheets of paper, ... g .....

the volume of tea in a cup, ... ml .....

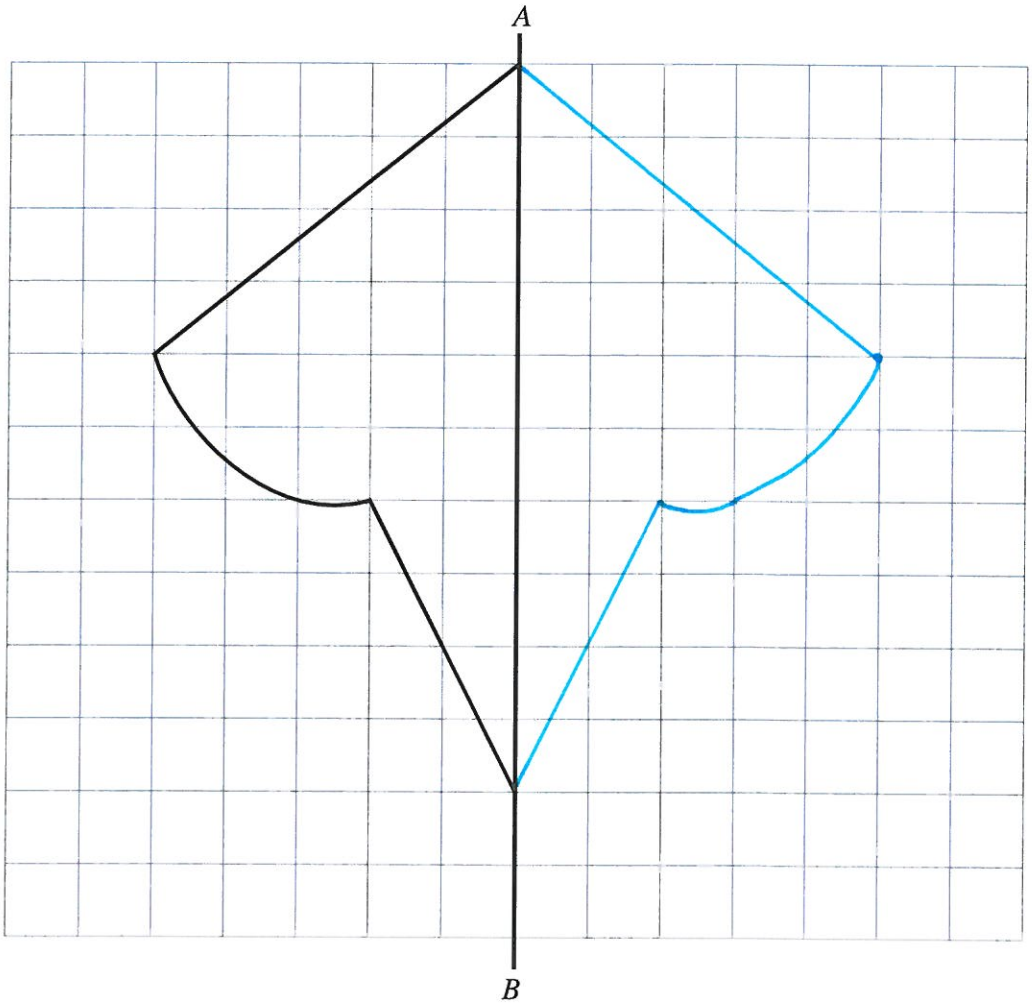
the height of a building, ... m .....

the area of the ceiling in a classroom. ..... m^2 .....

[4]

3. *(a)* Complete the following shape so that it is symmetrical about the line AB.

[2]

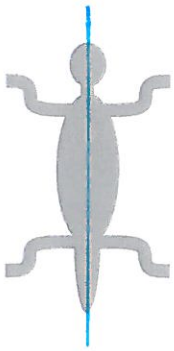


Examiner only

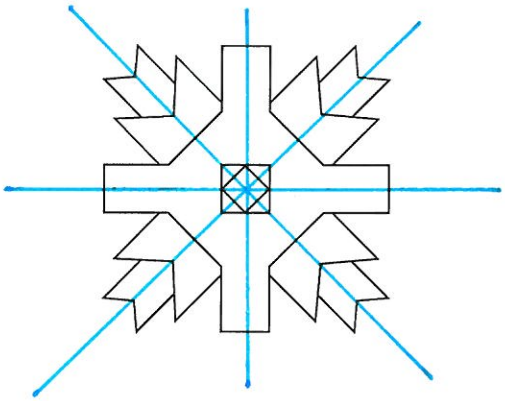
(b) Draw **all** the lines of symmetry on **each** of the following diagrams.

[3]

(i)



(ii)



4. A box contains the following 8 cards which are identical except for the numbers written on them.

1	2	2	4	4	4	4	4

One card is chosen at random from the box.
On the probability scale shown below, mark the points **A**, **B** and **C** where:

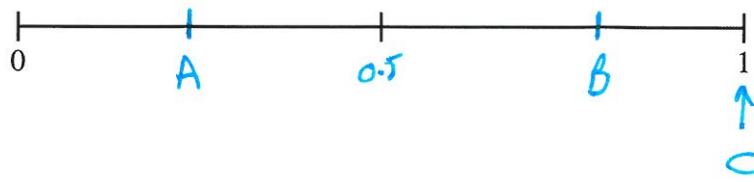
A is the probability that the chosen card has the number 2 on it.

B is the probability that the chosen card has the number 4 on it.

C is the probability that the chosen card has a number less than 5 on it.

$\frac{2}{8} = \frac{1}{4}$

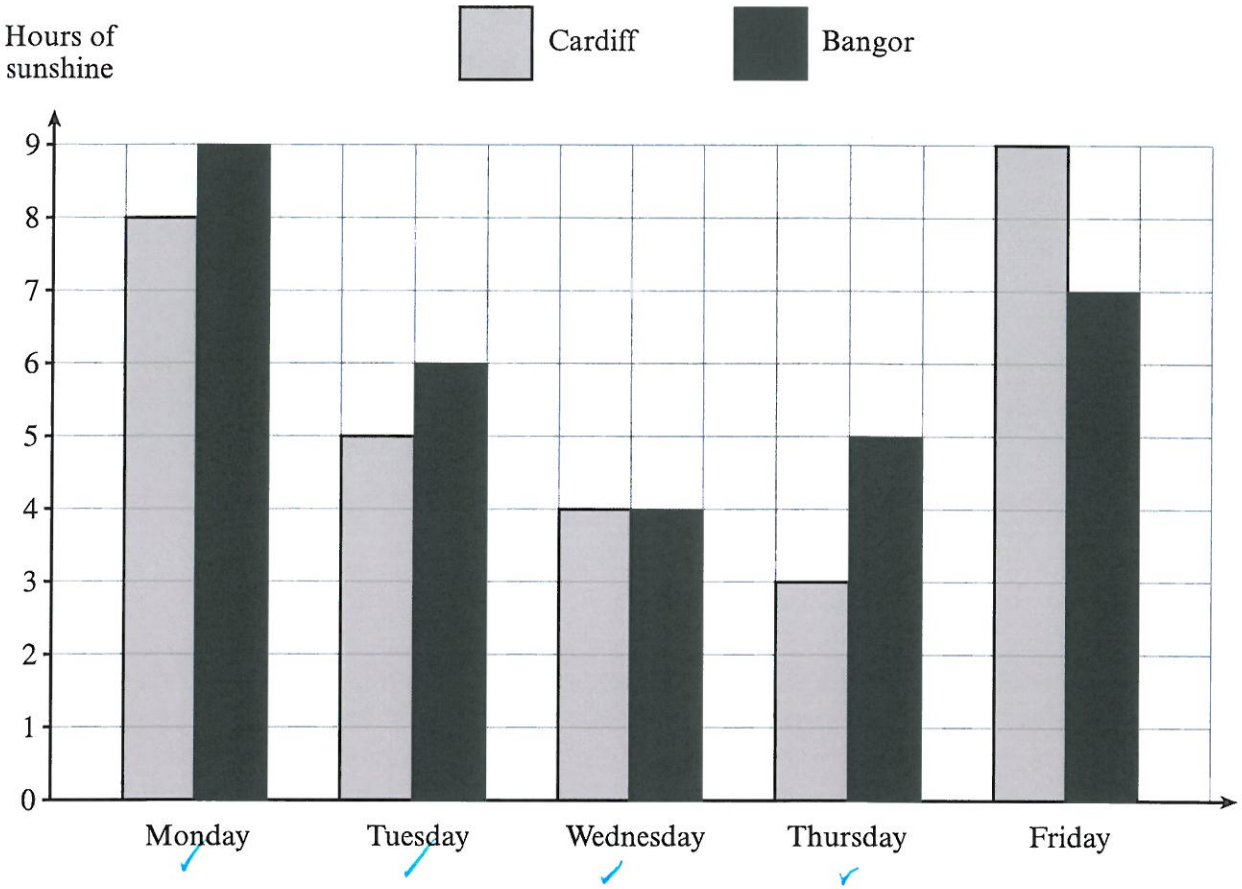
$\frac{5}{8}$



[3]

Examiner only

5. The chart shows the number of hours of sunshine recorded in Cardiff and Bangor on five days.



(a) On which day did Cardiff and Bangor have the same number of hours of sunshine?

Wednesday

[1]

(b) On how many days was the number of hours of sunshine in Bangor less than 8?

4 days

[1]

(c) On how many days was there more hours of sunshine in Cardiff than in Bangor?

1 day.

[1]

(d) What was the total number of hours of sunshine in Bangor over the 5 days?

9 + 6 + 4 + 5 + 7 = 31 hours.

[1]

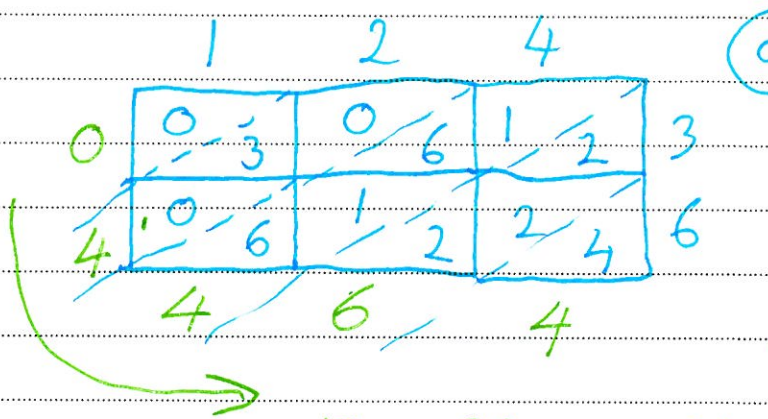
(e) What is the median number of hours of sunshine in Cardiff over the 5 days?

3 4 5 8 9 Median 5

[1]

Examiner only

6. *(a)* Calculate 124×36.



$124 \times 36 = 4464$

[3]

(b) Calculate

(i) $\frac{2}{5}$ of 40,

$\frac{1}{5}$ of $40 = 40 \div 5 = 8$

$\frac{2}{5}$ of $40 = 2 \times 8 = 16$

[2]

(ii) 6% of 400.

1% is 4

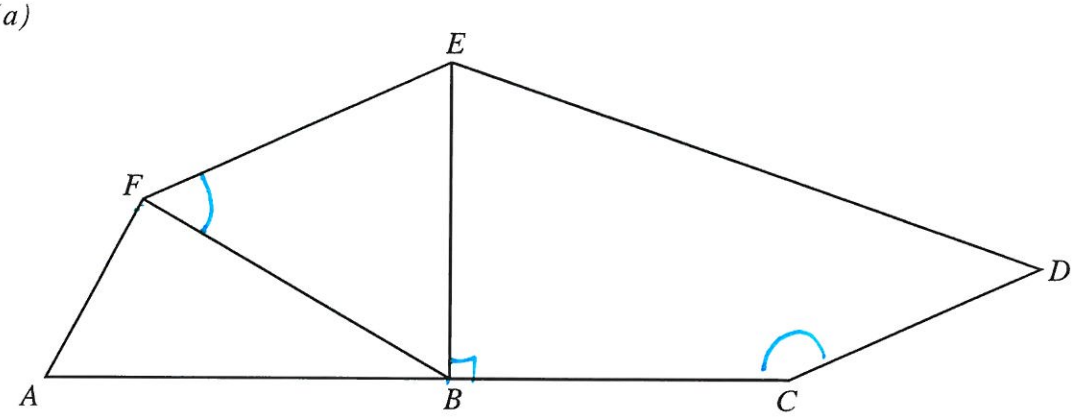
6% is $6 \times 4 = 24$

[2]

F

Examiner only

7. *(a)*



(i) Measure the length of DE.

5.2 cm

(ii) Name the line which is parallel to CD.

FE

(iii) Name the line which is perpendicular to AC.

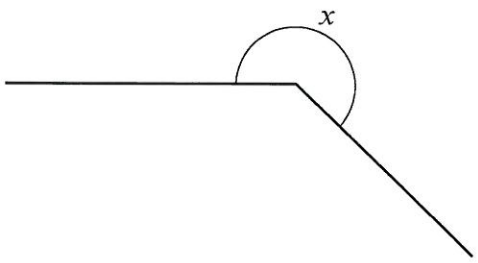
BE

(iv) Measure the size of $B\hat{F}E$. 54° °

(v) Measure the size of $B\hat{C}D$. ~~45°~~ 155° °

[5]

(b) Circle the special name which describes the angle marked x.

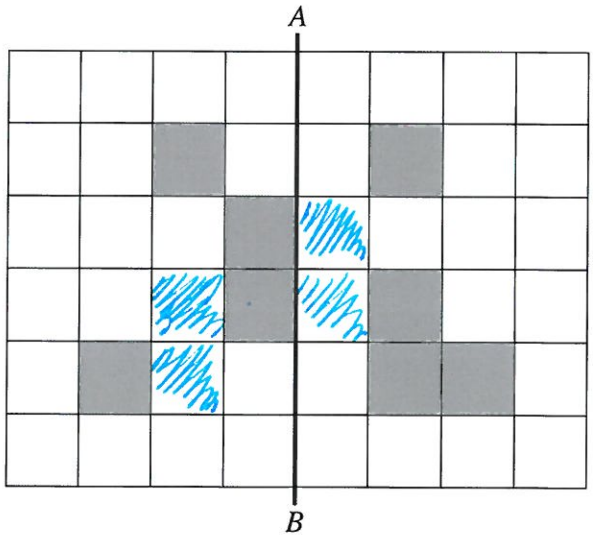


acute angle **obtuse angle** **right angle** **reflex angle**

[1]

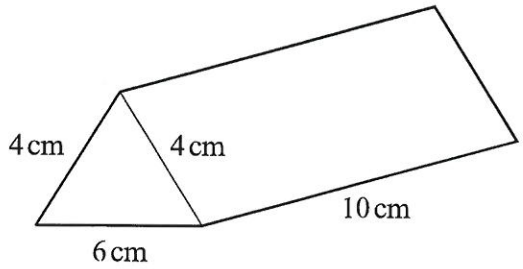
(c) By shading **four** squares, complete the shaded pattern below so that AB is a line of symmetry.

[2]



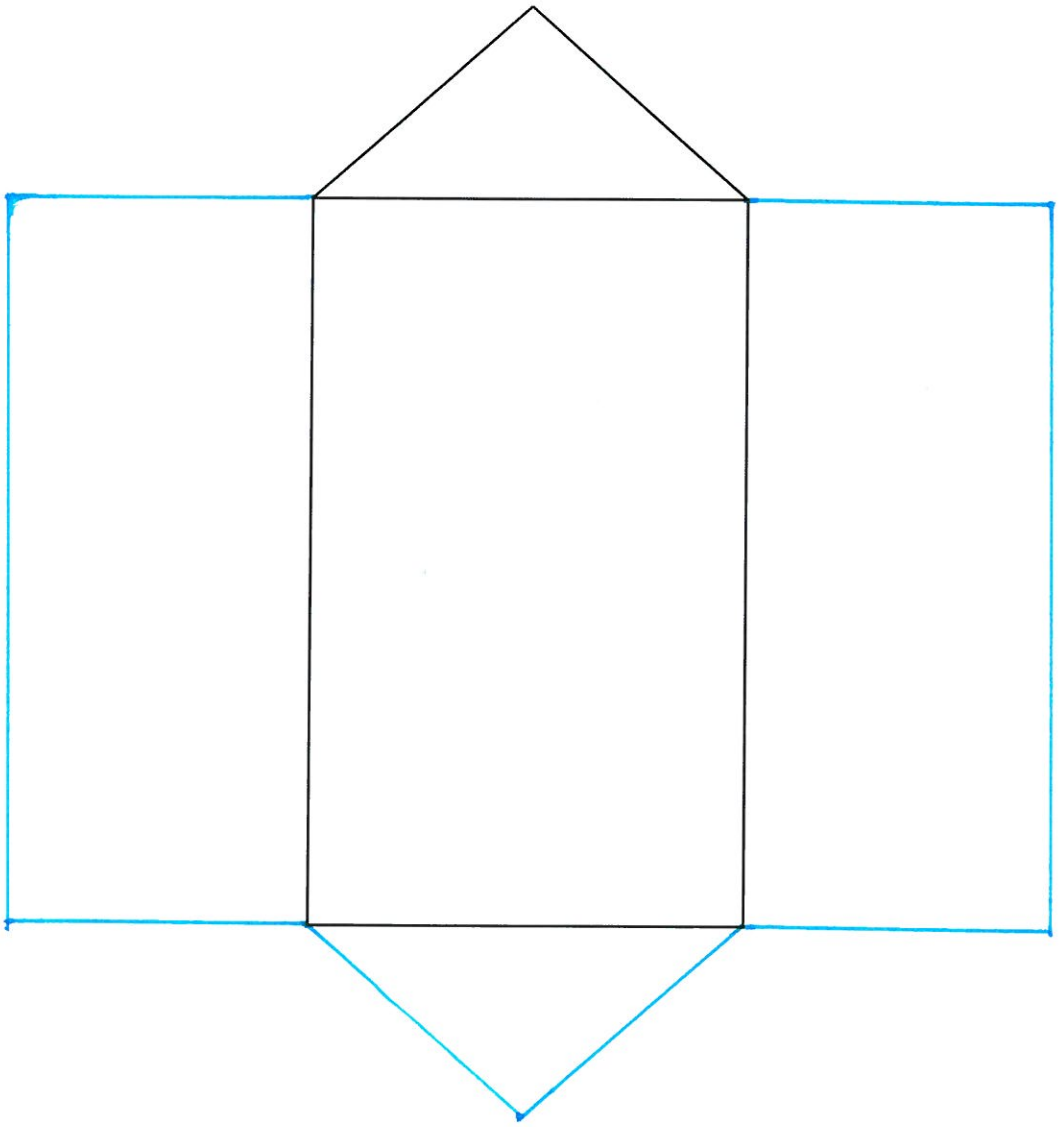
Examiner only

8. The diagram shows a sketch of a triangular prism.



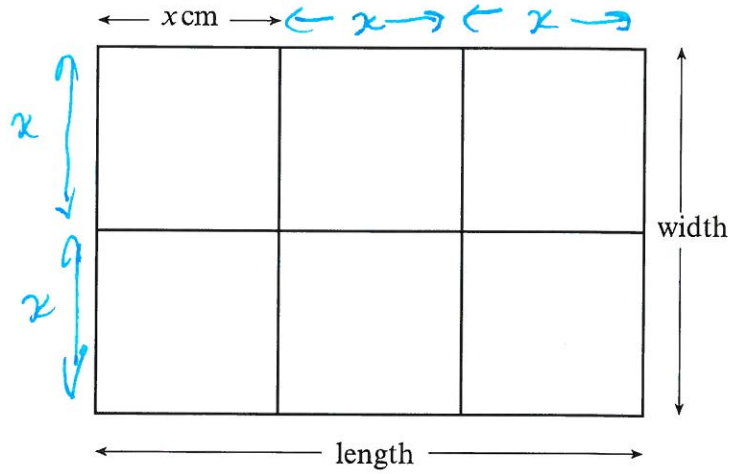
Draw an **accurate** net of the triangular prism.
Two faces have been drawn for you.

[4]



Examiner only

9. A rectangle is formed using 6 identical square tiles.
The length of each square tile is x cm.



(a) Write down, in terms of x,

(i) the length of the rectangle,

$x + x + x = 3x$

(ii) the width of the rectangle.

$x + x = 2x$

[2]

(b) The length of the rectangle is 15 cm.
What is the value of x?

$3x = 15$

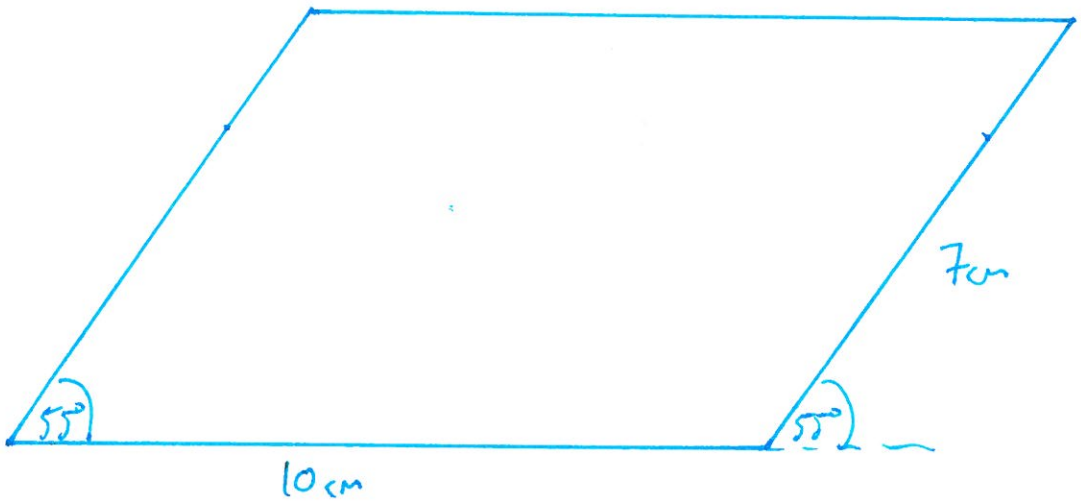
$x = \frac{15}{3} = 5\text{cm}$

[2]

Examiner only

10. Draw a parallelogram which has sides of 10 cm and 7 cm and an angle of 55°.

[4]



25 26 27 28 29 30 31 32 33 34 35

Examiner only

11. *(a)* Using only the numbers in the range 25 to 35,

(i) write down a cube number,

27

(ii) write down **all** the prime numbers.

29 31

[3]

D

(b) Find the value of

(i) $5^2 \times 2^4$,

$5^2 = 5 \times 5 = 25$

$2^4 = 2 \times 2 \times 2 \times 2 = 16$

$25 \times 16 = 400$

	2	5	
0	0 / 2	0 / 5	1
4	1 / 2	3 / 0	6
	0	0	

(ii) $7 \cdot 5 - 4 \cdot 27$,

$$\begin{array}{r} 7.^{4}\cancel{5}^{1}0 \\ -\ 4.27 \\ \hline 3.23 \end{array}$$

(iii) $0 \cdot 4 \times 0 \cdot 4$,

0.16

(iv) $\frac{5}{6} - \frac{2}{3}$.

$\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$ $\quad \frac{5}{6} - \frac{4}{6} = \frac{1}{6}$

[6]

Turn over.

Examiner only

12. The travel graph below represents Clive's car journey.

(a) How far from Aber was Clive when he started out?

6 miles

.....

[1]

(b) How far did he travel in the first hour?

37 - 6 = 31 miles

.....

[1]

(c) For how many minutes did he stop on his journey?

14 x 3 = 42 mins.

.....

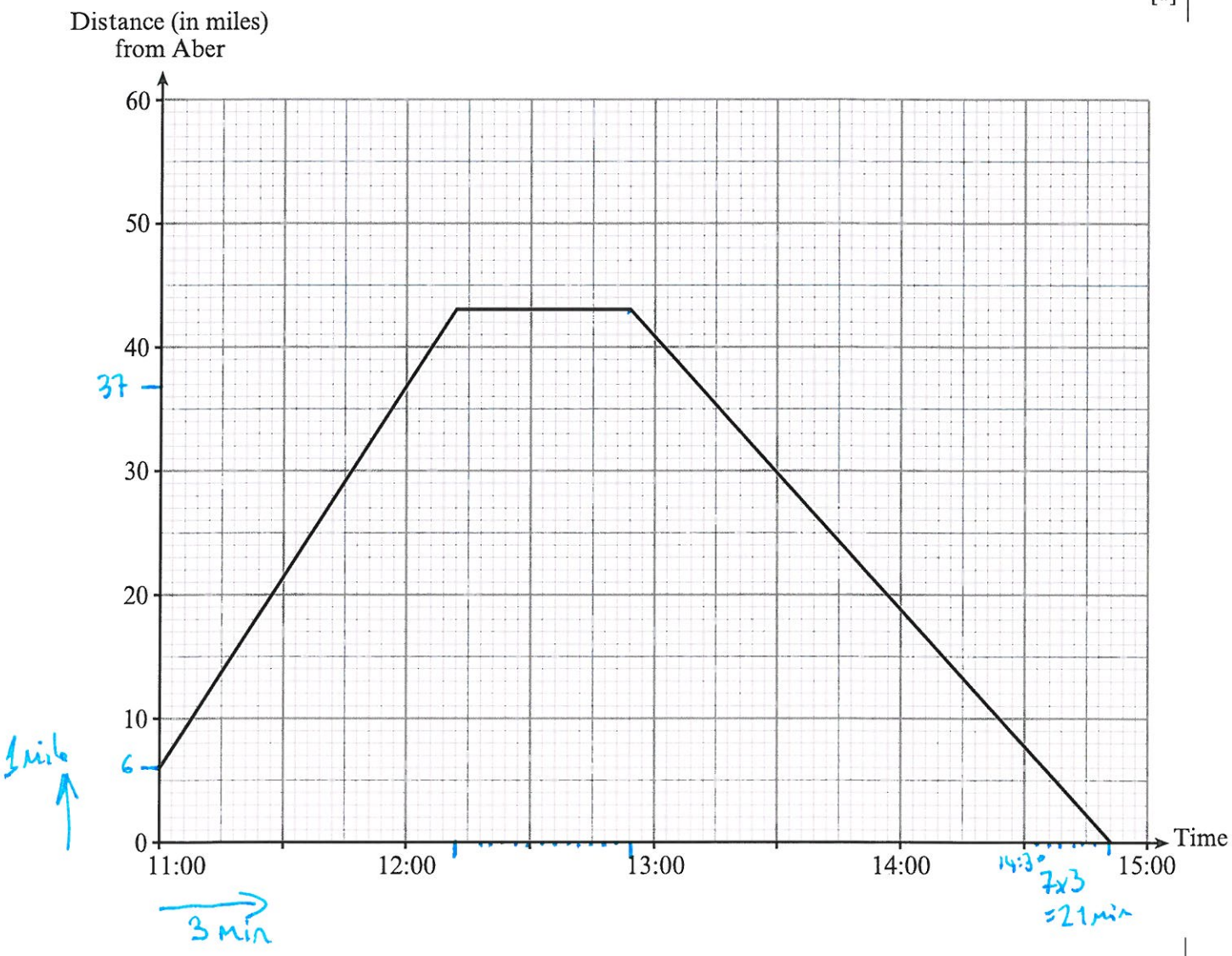
[1]

(d) At what time did he arrive in Aber?

14:51.

.....

[1]



Examiner only

13. Bars of chocolate are only sold in boxes of 8 or in boxes of 5.

(a) Gary wants to buy exactly 21 bars of chocolate.
Show how this can be done.

2 boxes of 8 = 16
1 box of 5 = 5 +
21

[1]

(b) Fiona buys fewer than 15 bars of chocolate.
List **all** the possible ways she could have done this.

1 x 5 = 5 1 x 8 = 8 1x8 + 1x5 = 13
2 x 5 = 10

[2]

(c) Show that it is impossible to buy exactly 17 bars of chocolate.

3x5 = 15 1x8 = 8 2x5 + 1x8 = 18
4x5 = 20 2x8 = 16 1x5 + 2x8 = 21
3x8 = 24
So no combination of 8box + 5 box.

[2]

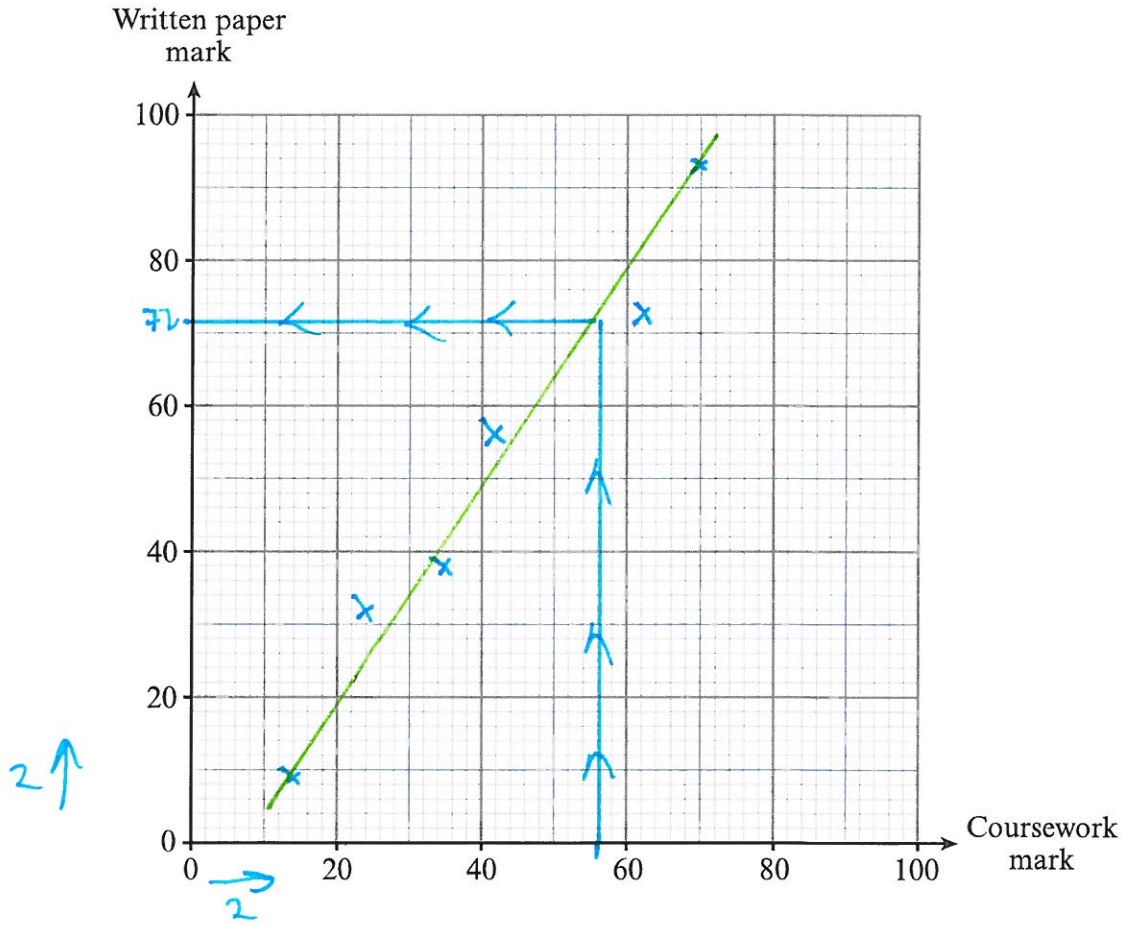
C

Examiner only

14. The assessment for an examination consists of two parts, namely, coursework marked out of 80 and a written paper marked out of 100. The marks for six pupils are given in the table.

Coursework mark	24	70	14	35	62	42
Written paper mark	32	93	9	38	72	56

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



(b) What type of correlation does your scatter diagram show?

positive

..... [1]

(c) Draw, by eye, a line of best fit on your scatter diagram. [1]

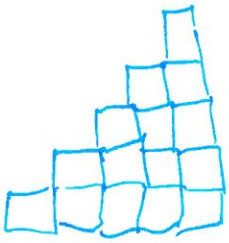
(d) Another pupil completed the coursework and was given a mark of 56, but was absent from the written paper examination. Use your line of best fit to estimate the mark on the written paper for this pupil.

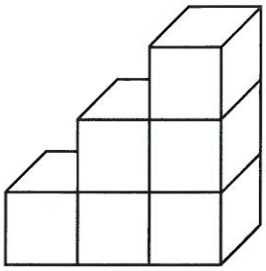
72

..... [1]

Examiner only

15. This stairway is made with 6 cubes. It has 3 steps.





How many cubes would be needed to make a similar stairway with 9 steps?

$1+2+3+4+5+6+7+8+9 = 45$

[3]

16. A farmer grows 336 kg of potatoes.
He sells them in 5 kg and 2 kg bags.
He uses the same number of 5 kg bags as 2 kg bags.
How many bags does he need altogether?

let number of bags be x

$5x + 2x = 336$

$7x = 336$

$x = \frac{336}{7}$

$7 \overline{)336}$ $\quad 48$

So need 48 5kg bags and 48 2kg bags = 96 bags altogether

[4]

Examiner only

17. The management of a health club intend to carry out a survey of their customers in order to find out their opinion on the alterations that have been made to the club.

(a) One of the questions in their questionnaire was

> *What do you think of the fantastic new improvements?*

What do you see wrong with this question?

it is a biased question.

[1]

(b) Another of their questions was

> *How often do you come into the club?*
>
> ☐ Very often ☐ Often ☐ Occasionally

(i) What do you see wrong with this question?

too vague

(ii) Write a better version of the question.

how many times a month do you come into the club?

☐ daily ☐ 2 or 3 times a week ☐ once a week ☐ less.

[3]

Examiner only

18. *(a)* One Monday morning a bug fell down a hole 55 cm deep. The bug immediately tries to climb out of the hole.

The bug climbs $\frac{1}{4}$ of a metre during the day, but every night it slides down $\frac{1}{8}$ of a metre.

On what day will the bug get out of the hole?

You must show your working.

$\frac{1}{4}$ m = 25 cm $\frac{1}{8}$ m = 12.5 cm

Monday 0 → 25 ↑ 12.5 cm ↓ So 12.5 cm up hole

Tues. 25 ↑ 12.5 ↓ So 12.5 + 12.5 = 25 cm up hole

Weds 25 ↑ 12.5 ↓ So 25 + 12.5 = 37.5 cm up.

Thurs 25 ↑ 12.5 ↓ So 37.5 + 12.5 = 50 cm up.

Fri Will get out.

[3]

(b) Write down the *n*th term of the sequence 3, 11, 19, 27, 35, ...

8 8 8 8

8n − 5

[2]

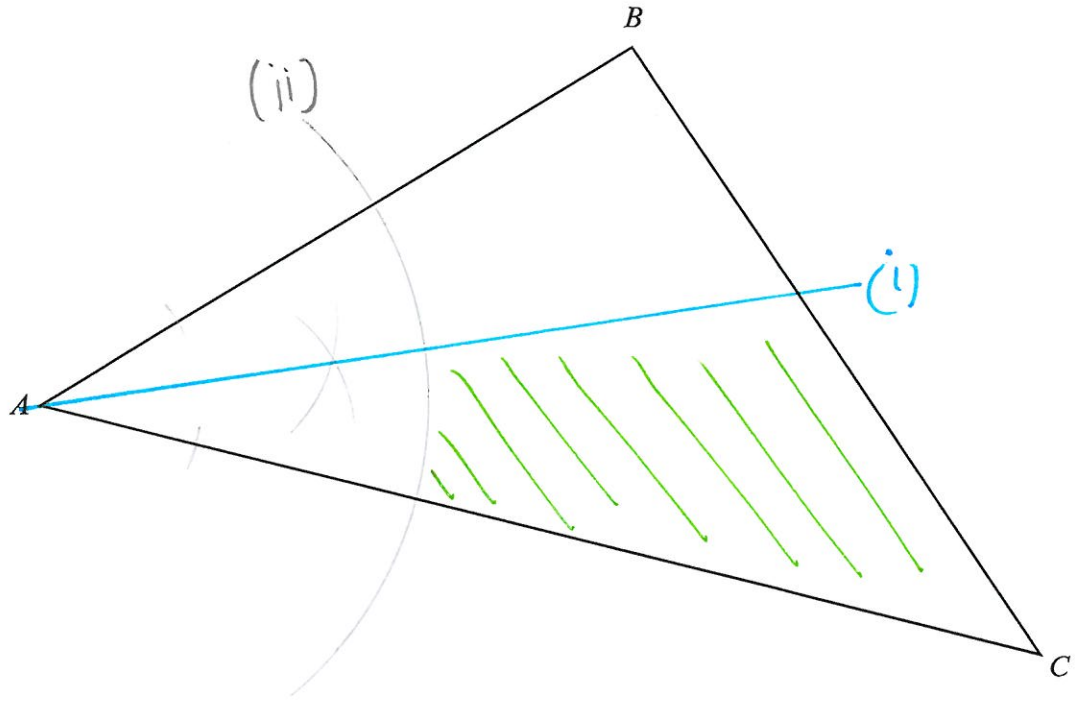
Examiner only

19. Find and shade the region of points inside triangle ABC that satisfy both of the following conditions.

(i) The points are nearer to AC than to AB.

(ii) The points are greater than 5 cm from A.

[3]



20. *(a)* Simplify $\frac{y^8}{y^2}$.

$\frac{y \times y \times y \times y \times y \times y \times y \times y}{y \times y} = y^6$

[1]

(b) Solve $8x + 17 = 3(x + 9)$.

$8x + 17 = 3x + 27$

$8x - 3x = 27 - 17$

$5x = 10$

$x = \frac{10}{5} = 2$

[3]