Surname	Centre Number	Candidate Number
Other Names		0

WJEC CBAC

GCSE

185/12

GRADE G F E D C

MARK 20 30 45 55 70

MATHEMATICS
WALES PILOT
FOUNDATION TIER
PAPER 2

A.M. THURSDAY, 17 November 2011

2 hours

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	11	11
2	3	14
3	3	17
4	7	24 ⇒ G
5	4	28
6	4	32 ⇒ F
7	3	35
8	4	39
9	5	44
10	4	48 ⇒ E
11	8	56 ⇒ D
12	5	61
13	3	64
14	6	70 ⇒ C
15	6	
16	7	
17	8	
18	4	
19	5	
TOTAL MARK		

0185 120001

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

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 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

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

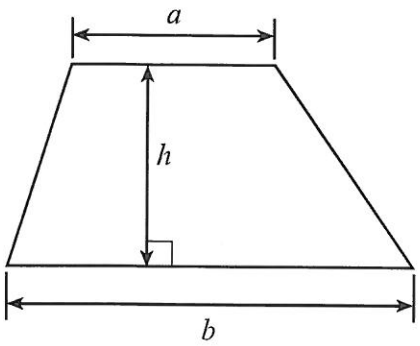
Unless stated, diagrams are not drawn to scale.

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

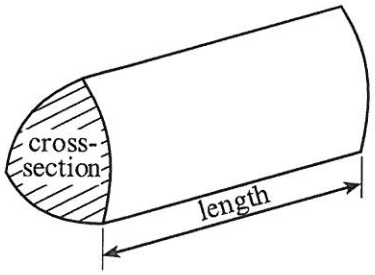
The number of marks is given in brackets at the end of each question or part-question.

Formula List

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



Volume of prism = area of cross-section × length



Examiner only

1. *(a)* (i) Janet buys some items for her office. Complete her bill.

Item	Cost
Computer desk	£ 85.60
6 box files @ £2.80 each	£ 16.80
4 packets of paper @ £6.57 per packet	£ 26.28
12 assorted colour pens @ 86p each	£ 10.32
Total	£ 139

[4]

(ii) Janet receives a discount of 5%.
How much is the discount on this bill?

0.05 x 139 = £6.95

[2]

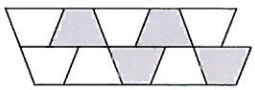
(b) A group of five pupils go to see a play.
The tickets cost £6.75 each.
They pay for the tickets with a £50 note.
How much change should they receive?

6.75 x 5 = £33.75

Change = 50 - 33.75 = £16.25

[3]

(c) (i) What percentage of the pattern is shaded?



40%

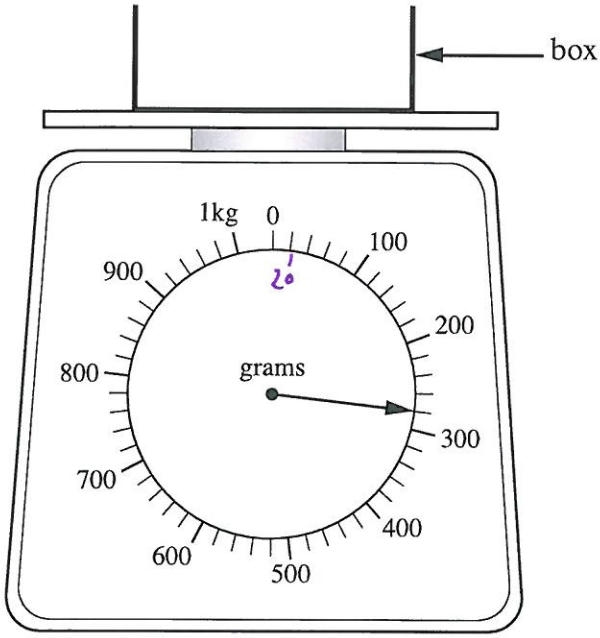
(ii) What percentage of the pattern is NOT shaded?

60%

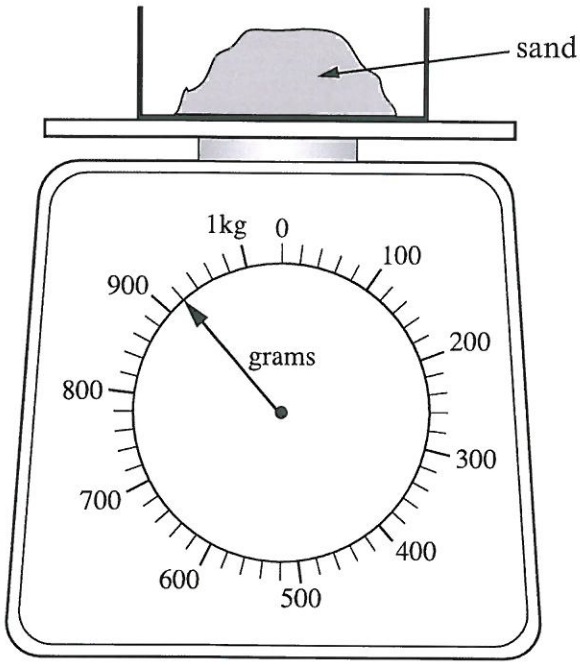
[2]

Examiner only

2. A box is placed on a scale.



Sand is poured into the box.



Find how much the sand weighs.

280g empty box

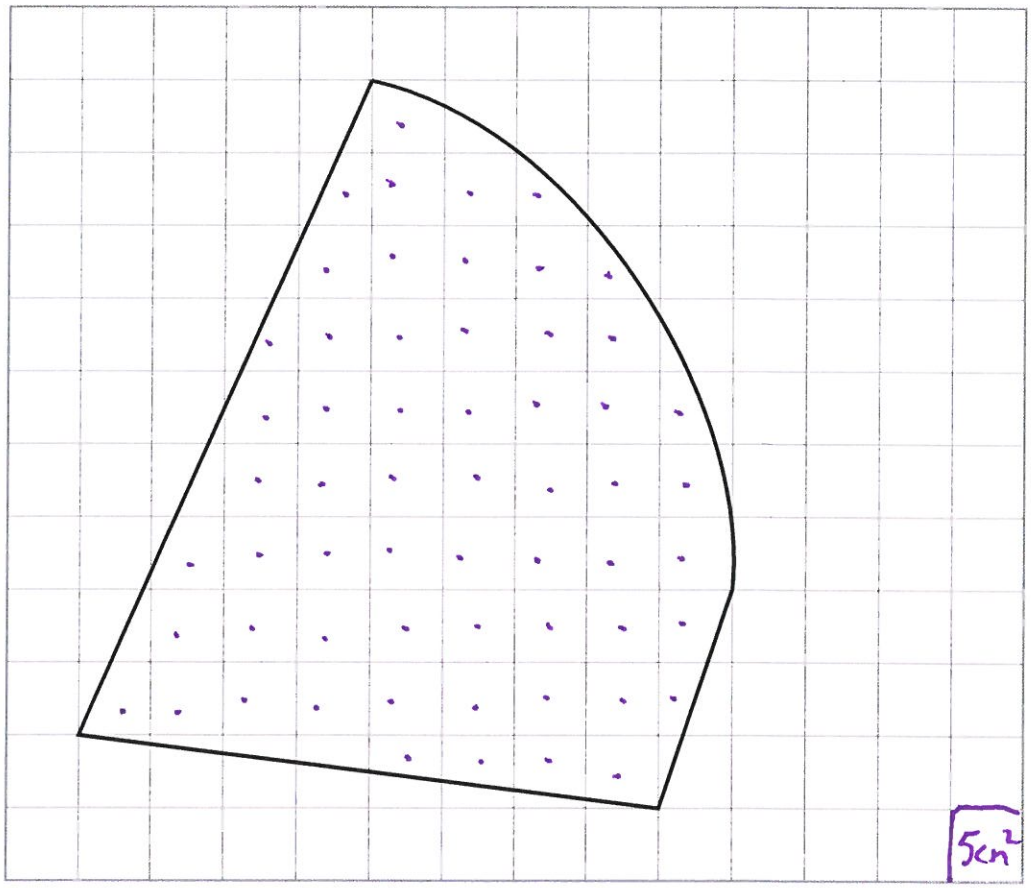
920g with sand

920 − 280 = 640g

[3]

Examiner only

3.



The above shape is drawn on a square grid.
By counting squares, estimate the area of the shape if each square represents an area of $5\,cm^2$.

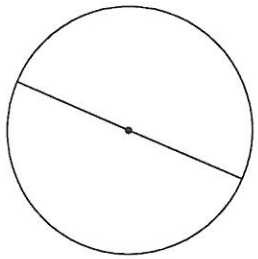
59 squares × 5 cm² = 295 cm²

(53 - 61 squares ok)

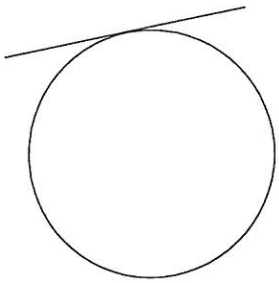
[3]

Examiner only

4. *(a)* Write down the special name of the straight line shown in each diagram below.



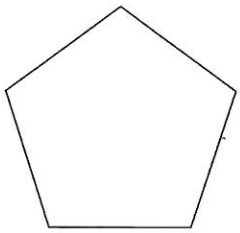
diameter



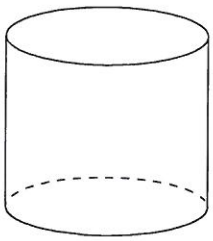
tangent

[2]

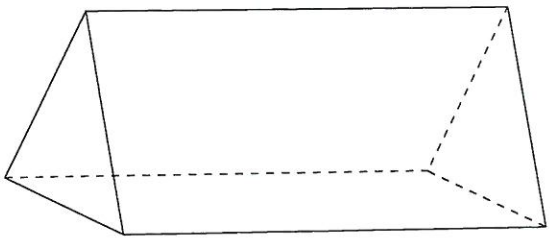
(b) Write down the name of each of the shapes shown below.



pentagon



cylinder



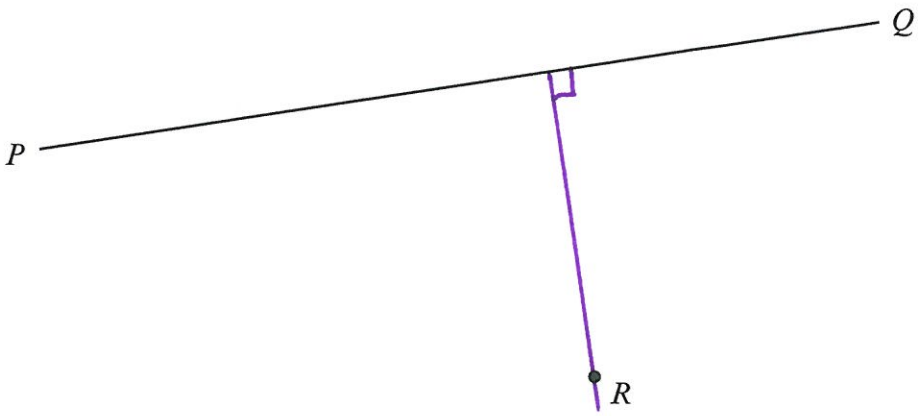
triangular prism

[3]

Examiner only

(c) (i) Measure, in centimetres, the length of the line PQ.

Length of PQ = 11·2 cm



(ii) Draw a line perpendicular to PQ that passes through R.

[2]

parallel

perpendicular

G

Examiner only

5. A list of numbers is made by using the formula

Value of the Number = 5 × Position of the Number + 6

(a) Find the **Value of the Number** when the **Position of the Number** is 9.

$V = 5 \times 9 + 6$

$= 45 + 6$

$= 51$

[2]

(b) Find the **Position of the Number** when the **Value of the Number** is 121.

$121 = 5 \times P + 6$

$121 - 6 = 5 \times P$

$115 = 5 \times P$

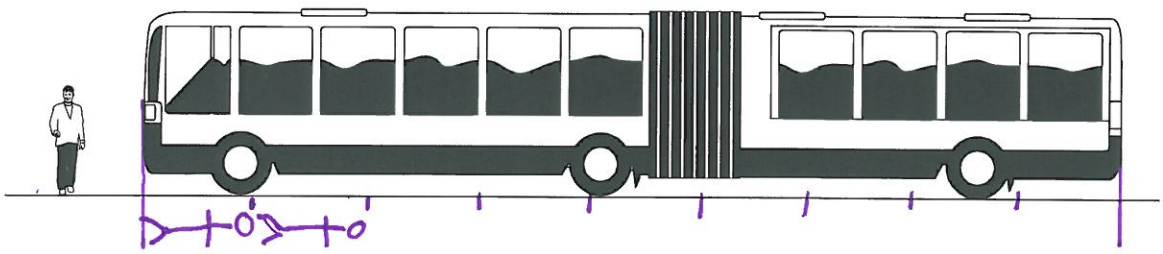
$\frac{115}{5} = P$

$P = 23$

[2]

Examiner only

6. The picture shows a 'bendy bus' with a man standing beside it.



Showing all your working, estimate the **actual** length of the bendy bus.

- Man is 2m tall

bus is 9 x 2m = 18m

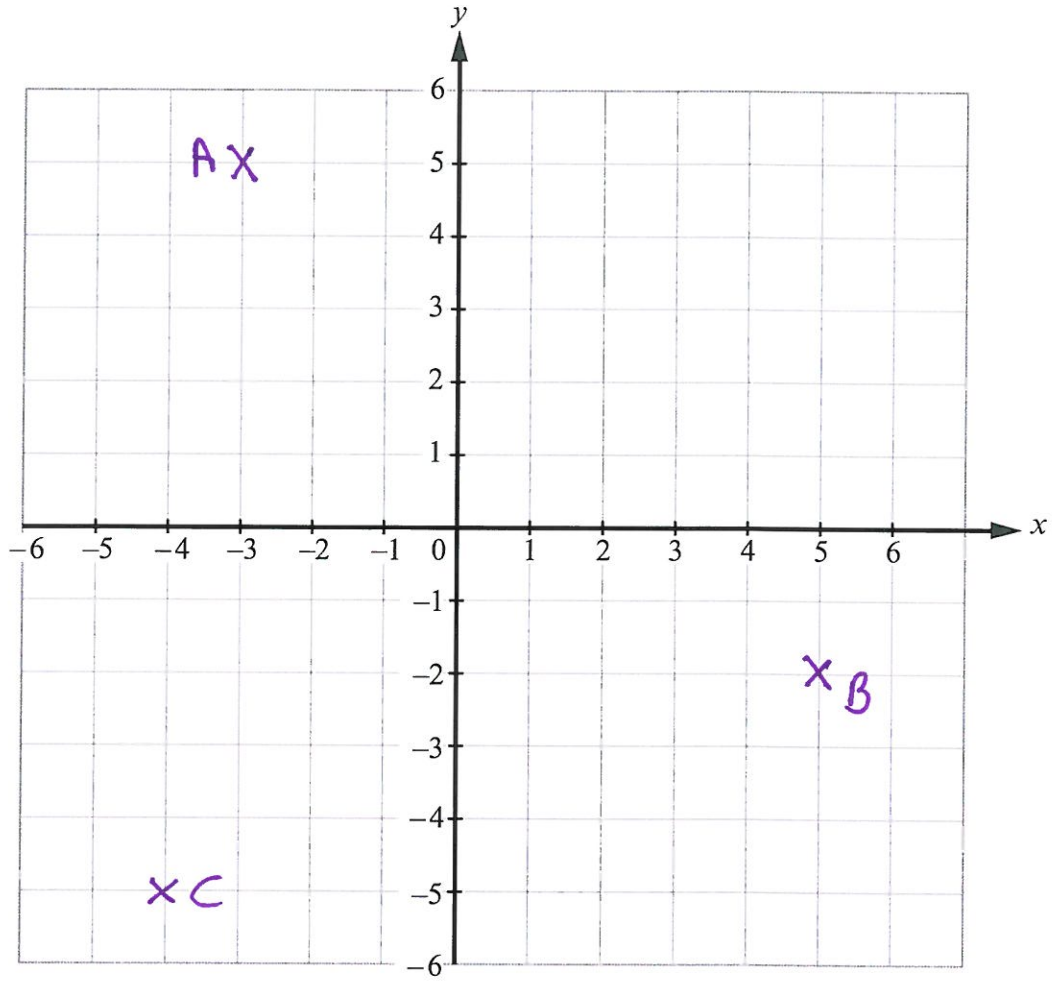
[4]

F

Examiner only

7. On the squared paper below, plot and label the points $A(-3, 5)$, $B(5, -2)$ and $C(-4, -5)$.

[3]



8. Bryn hires a floor sander.
It costs £37 for the first day and £18.50 for each additional day.
Bryn's total cost for hiring the sander was £129.50.
For how many days did he hire the sander?

Cost of additional days = 129.50 − 37 = £92.50

N° of extra days = 92.50 ÷ 18.50 = 5 days.

So hired for 6 days.

[4]

Examiner only

9. *(a)* (i) Geoff is t cm tall.
Jill is 6 cm taller than Geoff.
Write down, in terms of t, Jill's height.

$t + 6$

(ii) Concrete blocks each weigh w kg.
Write down, in terms of w, the weight of 10 blocks.

$10 \times w = 10w$

(iii) Mary is x years old.
Write down, in terms of x, her age 5 years ago.

$x - 5$

[3]

(b) Use the formula $V = U + 10T$ to find the value of V when $U = 20$ and $T = 9$.

$V = 20 + 10 \times 9$
$= 20 + 90$
$= 110$

[2]

10. *(a)* Hywel and Janet go on holiday to the USA.
They change £1300 into dollars ($) when the exchange rate was £1 = $1.55.
How many dollars did they get?

£ → [× 1.55] → $

$1300 \times 1.55 = \$2015$

[2]

(b) On their return they have $363 left over.
They change this back into pounds when the rate of exchange is £1 = $1.65.
How much do they get in pounds?

$363 \div 1.65 = £220$

[2]

€

Examiner only

11. The ages (in years) of the 8 members of a team are as follows:

23 27 45 24 33 34 21 41

(a) Find the median of the ages of the members of the team.

21 23 24 27 33 34 41 45

$\frac{27+33}{2}$

30

[2]

(b) Find the range of the ages of the members of the team.

45 − 21 = 24 years

[1]

(c) (i) Find the mean age of the members of the team.

$\frac{248}{8}$ = 31 years

(ii) One evening a member of the team did not turn up.
The mean age of those that were present was 29.
What was the age of the member who did not turn up?

$\frac{?}{7} = 29 \Rightarrow ? = 29 \times 7 = 203$

Age of missing person = 248 − 203 = 45

[5]

D

Examiner only

12. *(a)* Simplify $4x + 3 + 6x - 7$.

$+10x - 4$

[2]

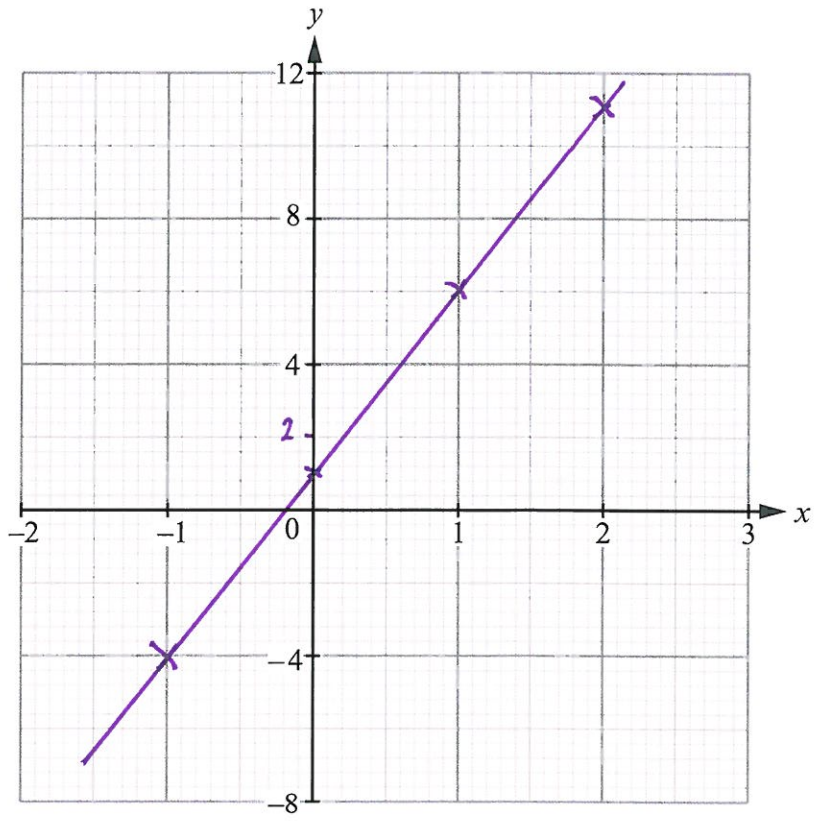
(b) (i) Complete the following table, giving values of $y = 5x + 1$, for values of x between -1 and 2.

x	-1	0	1	2
$y = 5x + 1$	-4	1	6	11

$5(x)$

(ii) Draw the graph of $y = 5x + 1$ on the graph paper below.

[3]



Examiner only

13. The sum of seven, single digit positive whole numbers is 17.
Six of the numbers are equal.
What is the other number?

try $1+1+1+1+1+1+?=17$

$6+?=17$

$?=17-6=11$

try 2 $2+2+2+2+2+2+?=17$

$12+?=17$

$?=17-12=5$

So the numbers are 2 (six of them) and 5 [3]

14. Five identical rectangles fit together as shown.
What is the total area which they cover?
Write down the units of your answer.

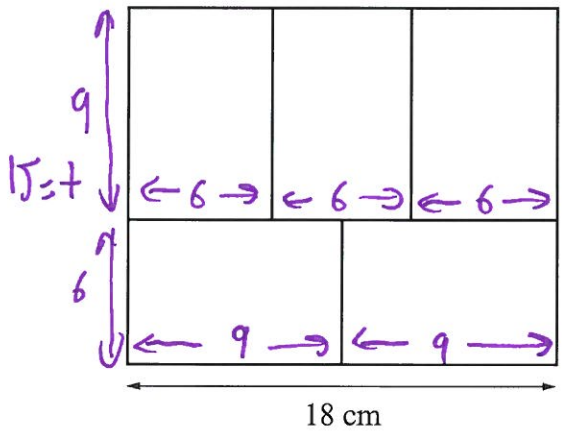


Diagram not drawn to scale

Area $= 15 \times 18 = 270\ cm^2$

[6]

(C)

Examiner only

15. *(a)* Solve the equation $4(6x - 7) = 32$.

$24x - 28 = 32$

$24x = 32 + 28$

$24x = 60$

$x = \frac{60}{24}$

[3]

(b) Solve $4x - 7 < 5$.

$4x < 5 + 7$

$4x < 12$

$x < \frac{12}{4}$

$x < 3$

[2]

(c) Simplify $m^3 \times m^4$.

$m \times m \times m \times m \times m \times m \times m$

m^7

[1]

Examiner only

16. The number of beans in each of 200 packets were counted.
The table below shows a summary of the results.

Number of beans per packet	Number of packets
20 to 38	30
39 to 57	42
58 to 76	50
77 to 95	78

(a) One of the packets is selected at random.
What is the probability that it contains

(i) 20 to 38 beans,

$\frac{30}{200}$

(ii) 58 to 95 beans?

$\frac{128}{200}$

[3]

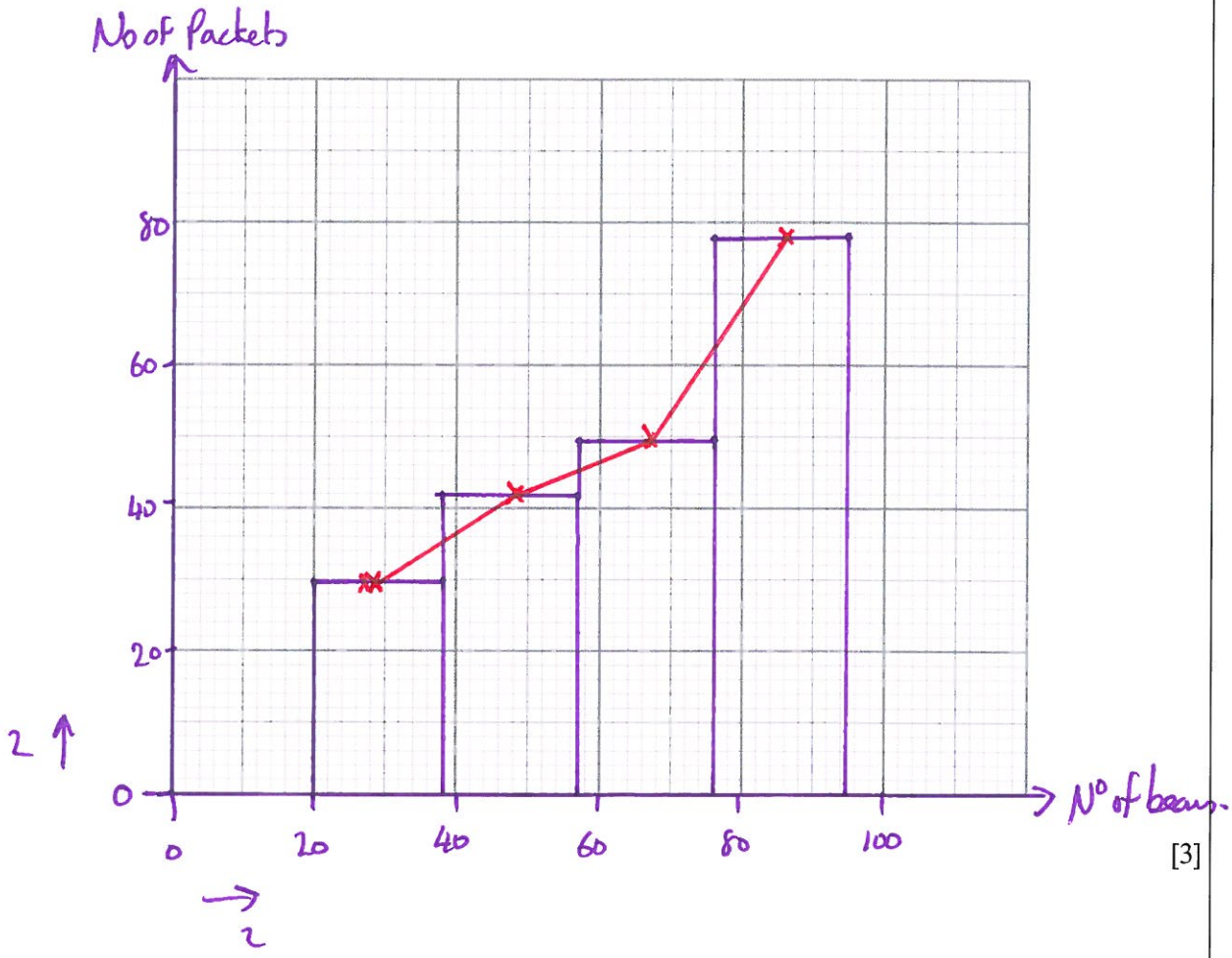
(b) Which is the modal group for the number of beans per packet?

77 to 95

[1]

Examiner only

(c) On the graph paper below, draw a grouped frequency polygon to show the distribution of the number of beans in a packet.



[3]

Examiner only

17. *(a)* Mrs Ridgley is considering changing her electricity supplier from **B Line Utilities** to **Domestic Utilities**.
She usually uses 2400 units each year.
She has found the following information.

B Line Utilities: standing charge 15.07p per day cost per unit 11.51p **Domestic Utilities:** standing charge 15.82p per day cost per unit 11.32p

Should Mrs Ridgley change her supplier?
You must show **all** your working and give reasons for your answer based on the possible savings made on her yearly bill.

B Line Utilities

Cost of standing charge = 365 days × £0.1507
= £55.01.

Cost of units = 2400 × £0.1151 = £276.24

So annual bill with B Line = 276.24 + 55.01 = £331.25

Domestic Utilities

Cost of standing charge = 365 × £0.1582 = £57.74

Cost of units = 2400 × £0.1132 = £271.68

So annual bill with Domestic = 271.68 + 57.74
= £329.42

So Mrs Ridgley should move to Domestic because it is cheaper.

[7]

Examiner only

(b) Mrs Ridgley finds out later on, that VAT at 5% is payable on the cost of the standing charge and the units used.
Would this affect her decision? You must give a reason for your answer.

No as the 5% is applied to both, so the difference between the two will still be the same.

[1]

18. Aaron bought a bike for £600 on 1st February 2010.
Every year the value of the bike depreciates by 12% of its value at the start of the year.
Find the value of the bike on 1st February 2012.

1st year Lose $0.12 \times 600 = £72$

So on 1st Feb 2011 worth $600 - 72 = £528$

2nd year Lose $0.12 \times 528 = £63.36$

So on 1st Feb 2012 worth $528 - 63.36 = £464.64$

[4]

Examiner only

19. A circular photograph is placed in a square frame as shown in the diagram.

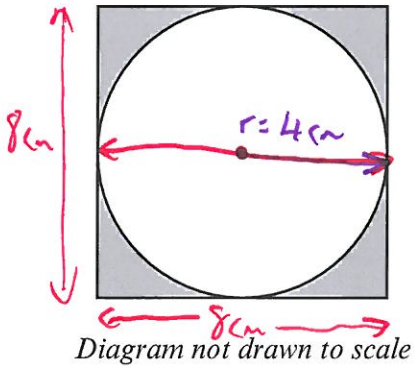


Diagram not drawn to scale

The diameter of the circular photograph is 8 cm.
Calculate the shaded area.

Area of Square $= 8 \times 8 = 64 cm^2$

Area of circle $= \pi r^2 = \pi (4)^2 = 50.27 cm^2$

Shaded area $= 64 - 50.27 = 13.73 cm^2$

[5]