Name:

GCSE Maths 2022
OCR Foundation Paper 1
Set A
Calculator

Corbettmaths

Equipment

1. A black ink ball-point pen.
2. A pencil.
3. An eraser.
4. A ruler.
5. A pair of compasses.
6. A protractor.

Guidance

1. Read each question carefully.
2. Check your answers seem right.
3. Always show your workings

Information

1. This paper has been created based on topics in the Advance Information.
2. Also see Corbettmaths for the checklist for the entire GCSE as these topics may still be useful for Paper 1
3. There is one question per topic - this paper is designed to give an opportunity to practice each topic rather than replicate the actual paper.
4. The marks for questions are shown in brackets

GCSE 2022 Resources

1. John buys 6 crates of apples.
Each crate contains 12 sacks of apples.
Each sack contains 24 apples.

How many apples did John buy in total?

$6 \times 12 = 72$

$72 \times 24 = 1728$

1728

(3)

2. 7 tables cost £318.50 $\div 7 = £45.50$
24 chairs cost £222 $\div 24 = £9.25$

A school want to buy 270 tables and 576 chairs.

The headteacher says the total cost will be under £17500
Is the headteacher correct?
You must show your workings.

$270 \times 45.50 = £12285$
$576 \times 9.25 = £5328$
$+$
$£17613$

No

(4)

3. Fill in the missing digits to make the addition correct.

$$\begin{array}{r} \boxed{4}\ 6\ 4 \\ +\ 2\ \boxed{8}\ 6 \\ \hline 7\ 5\ \boxed{0} \end{array}$$

(2)

4.

Format	Weight	1st Class	2nd Class
Letters	0 - 100g	62p	53p
Large Letters	0 - 100g	93p	73p
	101 - 250g	£1.24	£1.17
	251 - 500g	£1.65	£1.48

The table shows the prices of first and second class stamps for Letters and Large Letters up to 500g.

Matt is going to post a Letter weighing 80g and a Large Letter weighing 300g.
He chooses to post them both as second class.

How much money has Matt saved by posting second class instead of first class?

62 + 165 = 227

53 + 148 = 201

227 − 201 = 26

26p

(3)

5. A farmer says he has 2,500 sheep, to the nearest 100.

What is the greatest possible number of sheep he has?

2549

.....

(1)

---

6. Work out

$$\frac{7}{9} + \frac{1}{2} \div \frac{3}{5}$$

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

$\frac{7}{9} + \frac{5}{6}$

$\frac{14}{18} + \frac{15}{18} = \frac{29}{18}$

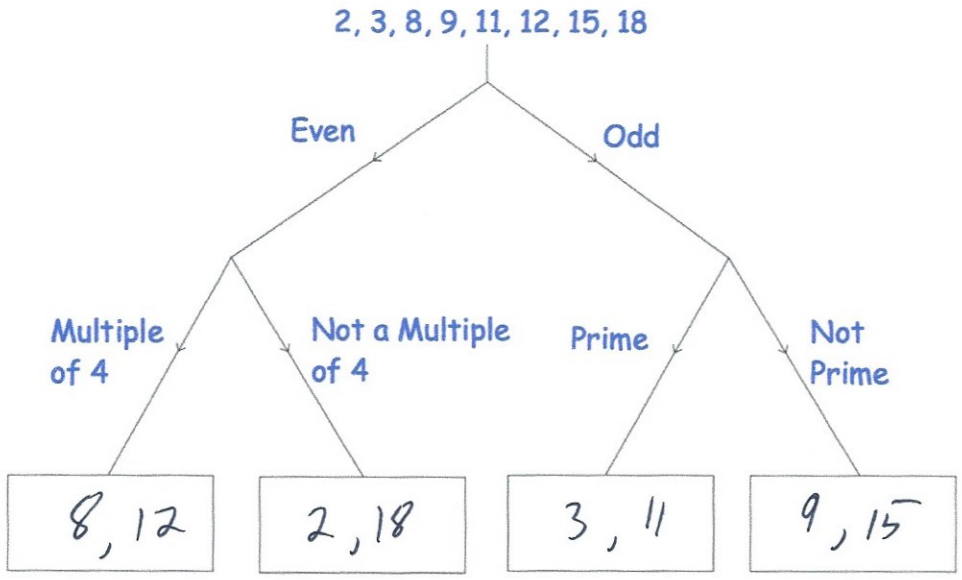
$1\frac{11}{18}$

.....

(3)

---

7. Sort **all** the numbers into the correct boxes.



(3)

8. Mr Jenkins is tiling a square floor.
He uses 196 square tiles.

Work out how many tiles are in each row.

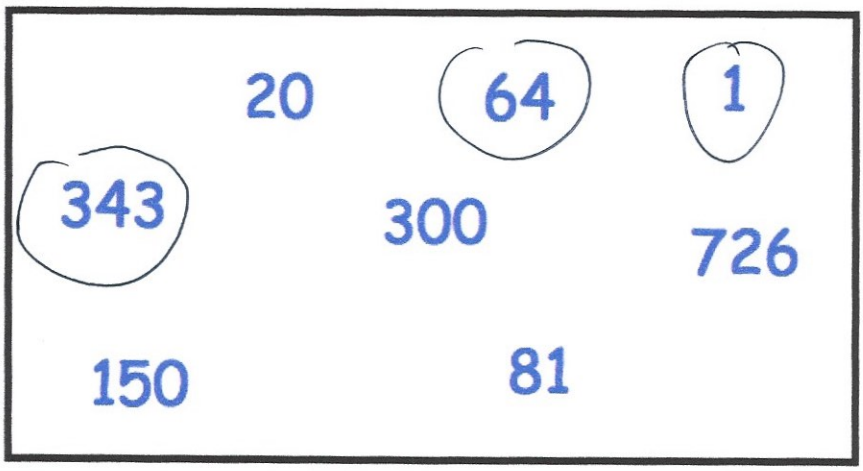
$\sqrt{196} = 14$

14

.....

(2)

9.



Circle all the cube numbers.

(2)

10. Write the following numbers in standard form.

(a) 5600

5.6×10^3

(1)

(b) 41200000

4.12×10^7

(1)

(c) 0.00000008

8×10^{-8}

(1)

Work out, giving each answer in standard form.

(d)

$(4 \times 10^5) \times (2 \times 10^4)$

8×10^9

(2)

(e)

$(5 \times 10^6) \times (7 \times 10^8)$

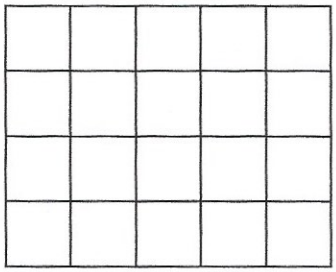
35×10^{14}

3.5×10^{15}

(2)

11. Jamie wants to shade $\frac{1}{3}$ of the grid.

Each square he decides to shade, he must shade in fully.



5 x 4 = 20

Can he successfully shade in $\frac{1}{3}$ of the grid?

Explain your answer.

No, 20 is not divisible by 3.

(2)

---

12. Arrange these fractions in order, smallest first.

$\frac{2}{3}$ $\frac{7}{9}$ $\frac{5}{6}$ $\frac{11}{18}$

$\frac{12}{18}$ $\frac{14}{18}$ $\frac{15}{18}$ $\frac{11}{18}$

$\frac{11}{18}$, $\frac{2}{3}$, $\frac{7}{9}$, $\frac{5}{6}$

(2)

---

13. Write these numbers in order of size.
Start with the smallest number.

0.13 $\frac{3}{20}$ 12% $\frac{1}{10}$ 0.09

13% 15% 10% 9%

0.09, $\frac{1}{10}$, 12%, 0.13, $\frac{3}{20}$

(2)

14. Edward and his four friends go on holiday.
The total cost of the holiday is £3600.

Edward is going to stay longer than his friends and he is going to pay 35% of the total cost.

The rest of the total cost is to be shared equally between his four friends.

Edward says,

"*I pay twice as much money for the holiday than each of my friends.*"

Is Edward correct?
Explain your answer.

$0.35 \times 3600 = £1260$ (Edward)

$3600 - 1260 = 2340$

$2340 \div 4 = 585$

$585 \times 2 = 1170$

No, Edward pays more than twice.

(4)

---

15. Priya bought a house for £80000.
She sold the house for £122400.

$122400 - 80000 = 42400$

Work out the percentage profit.

$\frac{42400}{80000} \times 100$

53

.....%

(2)

16. A fish tank sprung a leak and loses 20% of its water.
There is now 240 litres of water in the fish tank.

How much water was in the fish tank before the leak?

80% of y = 240

1% of y = 3

100% of y = 300

300

(3)

17. At a rugby match, the ratio of children to adults is 2 : 3
There are 80 children in the crowd.
Each adult ticket costs £8
Each child ticket costs a quarter of the adult ticket. £2

Work out the total money made from ticket sales.

80 ÷ 2 = 40

40 × 3 = 120

120 × 8 = 960

2 × 80 = 160

£ 1120

(4)

18. Leah bought a new car costing £18,000
She paid a deposit of £2,000.
Leah paid the rest of the money over 25 equal monthly payments.

How much was each monthly payment?

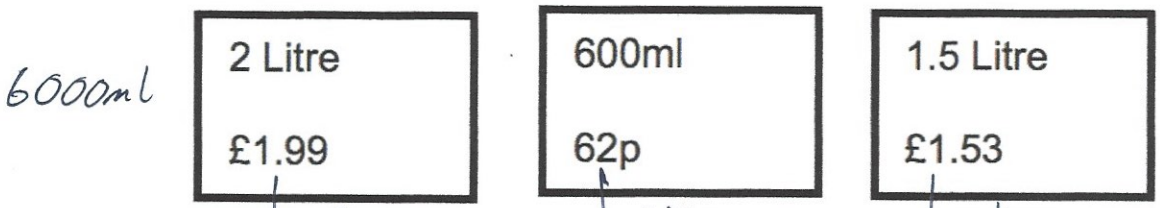
18000 - 2000 = 16000

16000 ÷ 25 = £640

£ 640

(2)

19. A shop sells cola in three different size bottles.



Which size bottle is the best value for money?
You must show all your working.

£5.97

£6.20

£6.12

2 Litre bottle is best value.

(3)

20. Calculate the value of

$$\sqrt[3]{(25.4-5.9)^2}$$

(a) Write down your full calculator display.

7.244744507

(1)

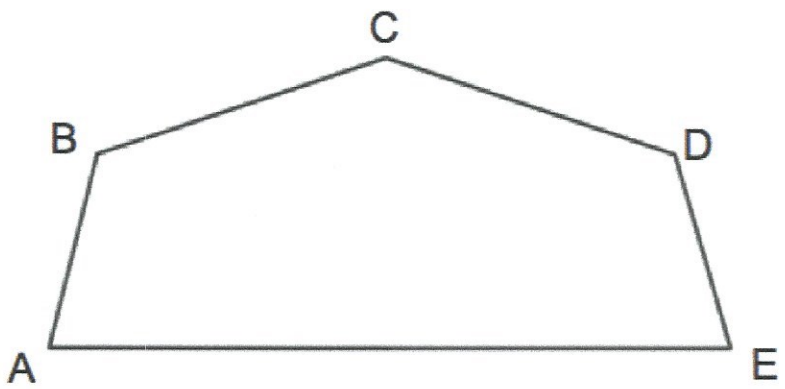
(b) Give your answer to three significant figures.

7.24

(1)

---

21. Shown is a shape ABCDE.



(a) What is the name of shape ABCDE?

Pentagon

(1)

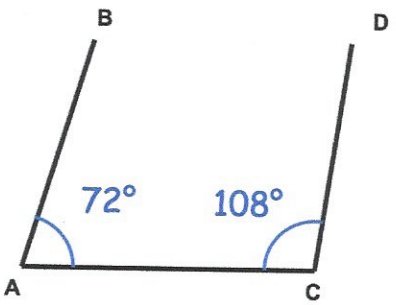
(b) Measure the length of line AE.

9 cm

* depends on printer settings.

(1)

22.



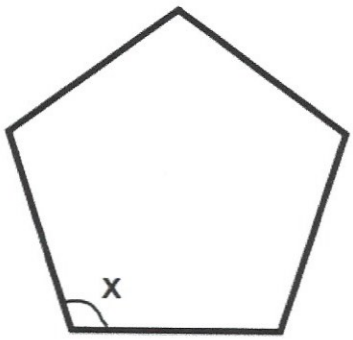
Not drawn accurately

Edward says the lines AB and CD are parallel.
Is Edward correct?
Explain your answer.

Yes - cointerior angles add up to 180°.

(2)

23. Shown below is a regular pentagon.

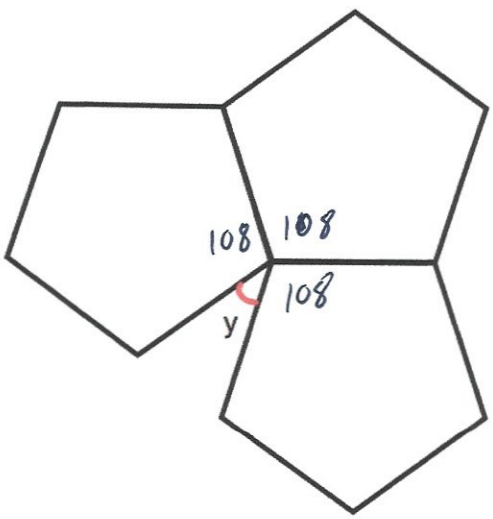


(a) Find the size of each interior angle.

$540 \div 5$

x = 108 °

(2)



Three identical regular pentagons are joined as shown above.

(b) Work out the size of angle y.

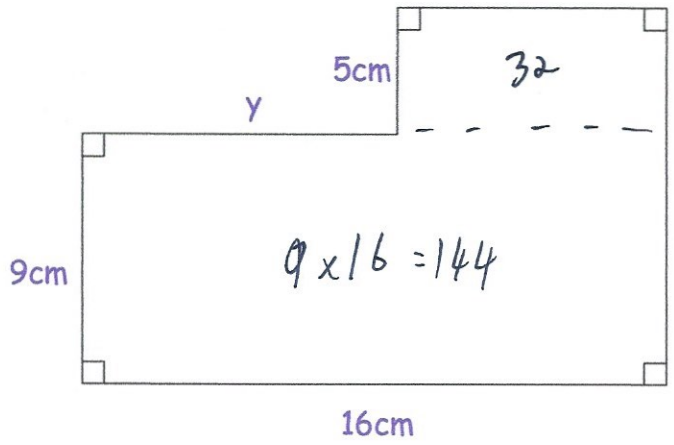
$108 \times 3 = 324$

$360 - 324 = 36°$

y = 36 °

(2)

24.



The total area is 176cm²

Find the value of y

176 - 144 = 32

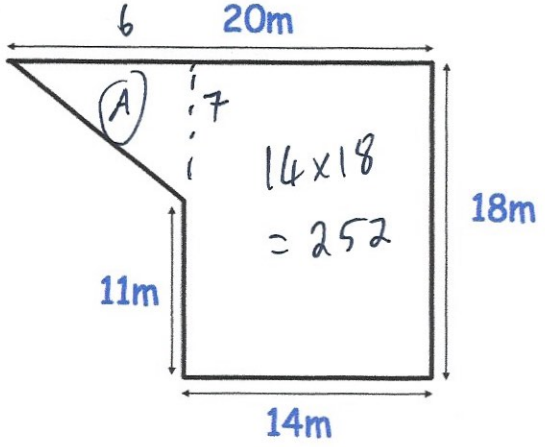
32 ÷ 5 = 6.4

16 - 6.4

9.6 .....cm

(4)

25. Shown is the plan of a small field.



A: $\frac{1}{2} \times 6 \times 7 = 21$

$252 + 21 = 273$

Thomas is going to keep some chickens in the field.
Each chicken needs $5m^2$.

Work out the greatest number of chickens Thomas can keep in the field.

$273 \div 5 = 54.6$

54

.....

(5)

---

26. A car travels at 20km/h
Write this speed in m/s

20000 m/h

333.$\dot{3}$ m/min

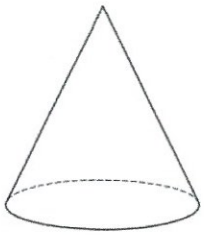
5.$\dot{5}$ m/s

5.$\dot{5}$

.....m/s

(2)

27. Shown is a solid shape.

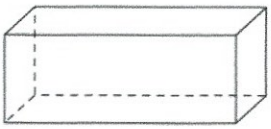


(a) What is the mathematical name for the shape?

Cone

.....

(1)



The shape above is a cuboid.

(b) How many faces does a cuboid have?

6

.....

(1)

(c) How many edges does a cuboid have?

12

.....

(1)

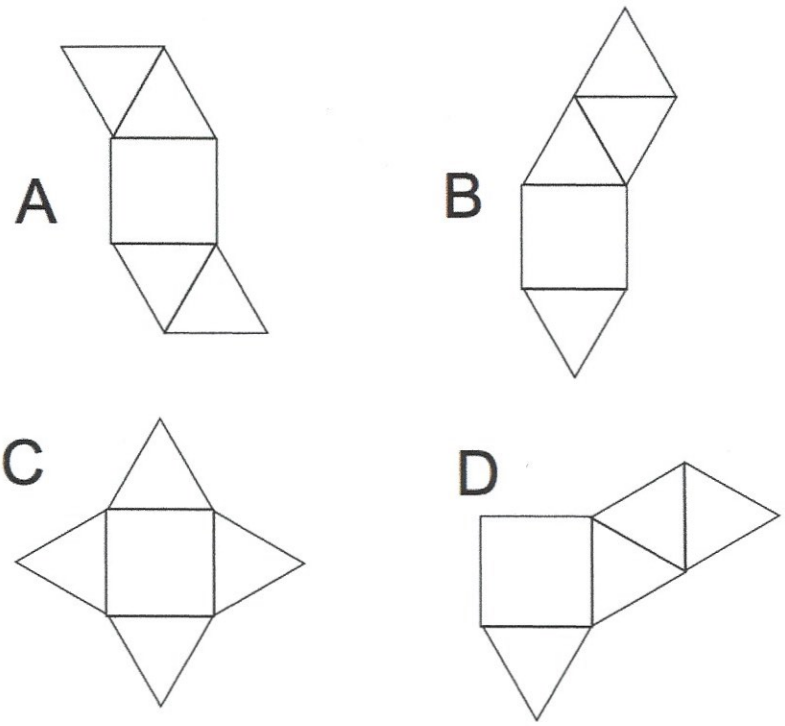
(d) How many vertices does a cuboid have?

8

.....

(1)

28. Here are 4 diagrams.



Three of these diagrams show a net for a square-based pyramid.

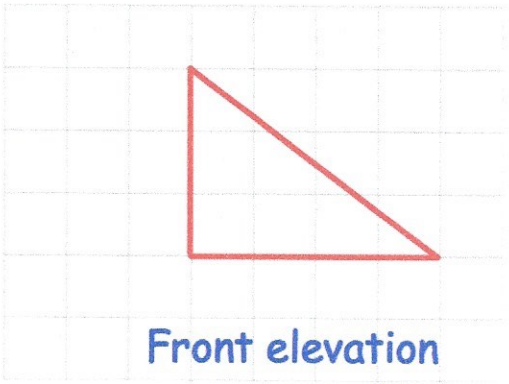
Write down the letter of the diagram which is **not** a net for a square-based pyramid.

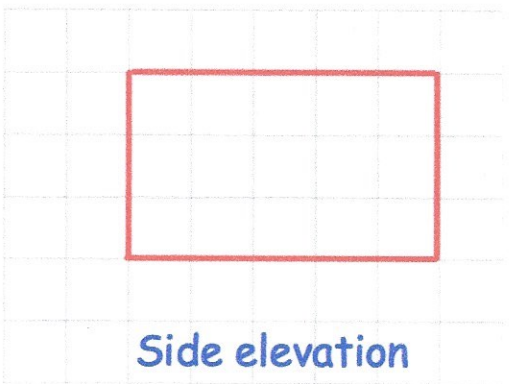
B

.....

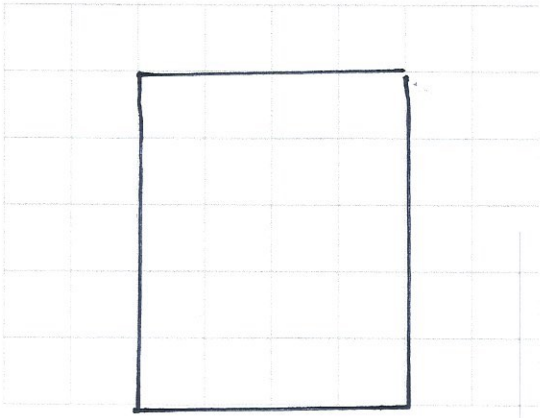
(1)

29. Here are the front and side elevations of a solid shape.





On the grid, draw the plan view.



(2)

30. Ella finishes school at 3pm.
The time on her watch is 14:13

How long is it until Ella finishes school?

47 mins

(1)

31.

A village is 20 miles from Belfast.

Conor drives from the village to Belfast at 40mph
Kelly drives from the village to Belfast at 50mph

Work out how much longer the journey takes Conor.
Give your answer in minutes.

s d t

20/40 = 0.5 hours

30 mins

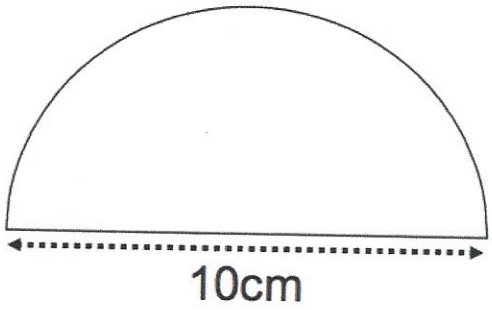
20/50 = 0.4 hours

24 mins

6 .....minutes

(3)

32. Shown is a semi-circle.



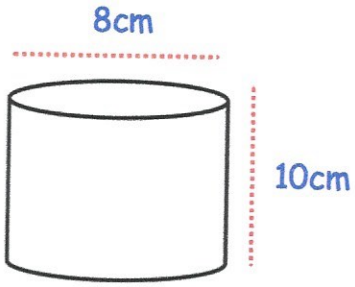
Work out the area.
State the units for your answer.

$\frac{1}{2} \times \pi \times 5^2$

39.27cm²

(3)

33. Below is a cylinder with diameter 8cm and ~~10cm~~.



Find the volume of the cylinder.

$V = \pi \times 4^2 \times 10$

502.65 cm³

(3)

34. Shown is a sphere with radius 8cm.

Calculate the volume of the sphere.

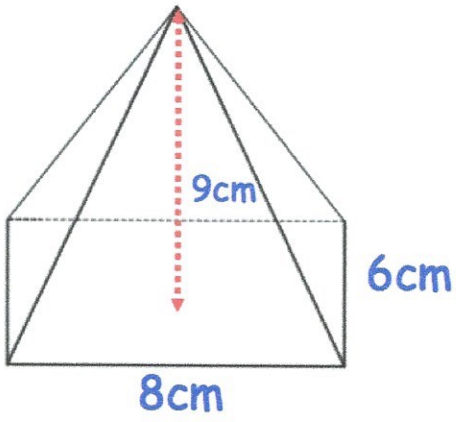
$\frac{4}{3} \times \pi \times 8^3$

2144.66 .....cm³

(3)

---

35. A rectangular-based pyramid is shown below.



Calculate the volume of the pyramid.

$\frac{1}{3} \times 8 \times 6 \times 9$

144 .....cm³

(2)

36. $\mathbf{a} = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 1 \\ 5 \end{pmatrix}$

Work out $4\mathbf{a} + 2\mathbf{b}$

$\begin{pmatrix} 8 \\ 0 \end{pmatrix}$ $\begin{pmatrix} 2 \\ 10 \end{pmatrix}$

$\begin{pmatrix} 10 \\ \dots \\ 10 \end{pmatrix}$

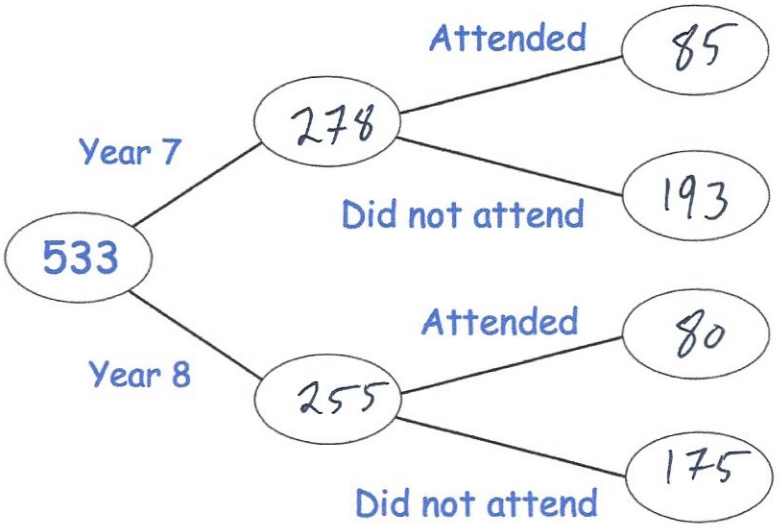
(2)

37. In a secondary school, there are 533 students altogether in Years 7 and 8. There are 255 students in Year 8.

The PE department run football training after school on a Thursday for Year 7 and 8 students.

85 of the 165 students that attended football training are in Year 7.

(a) Complete the frequency tree.



(2)

(b) What fraction of Year 8 students attended football training.

$\frac{80}{255}$

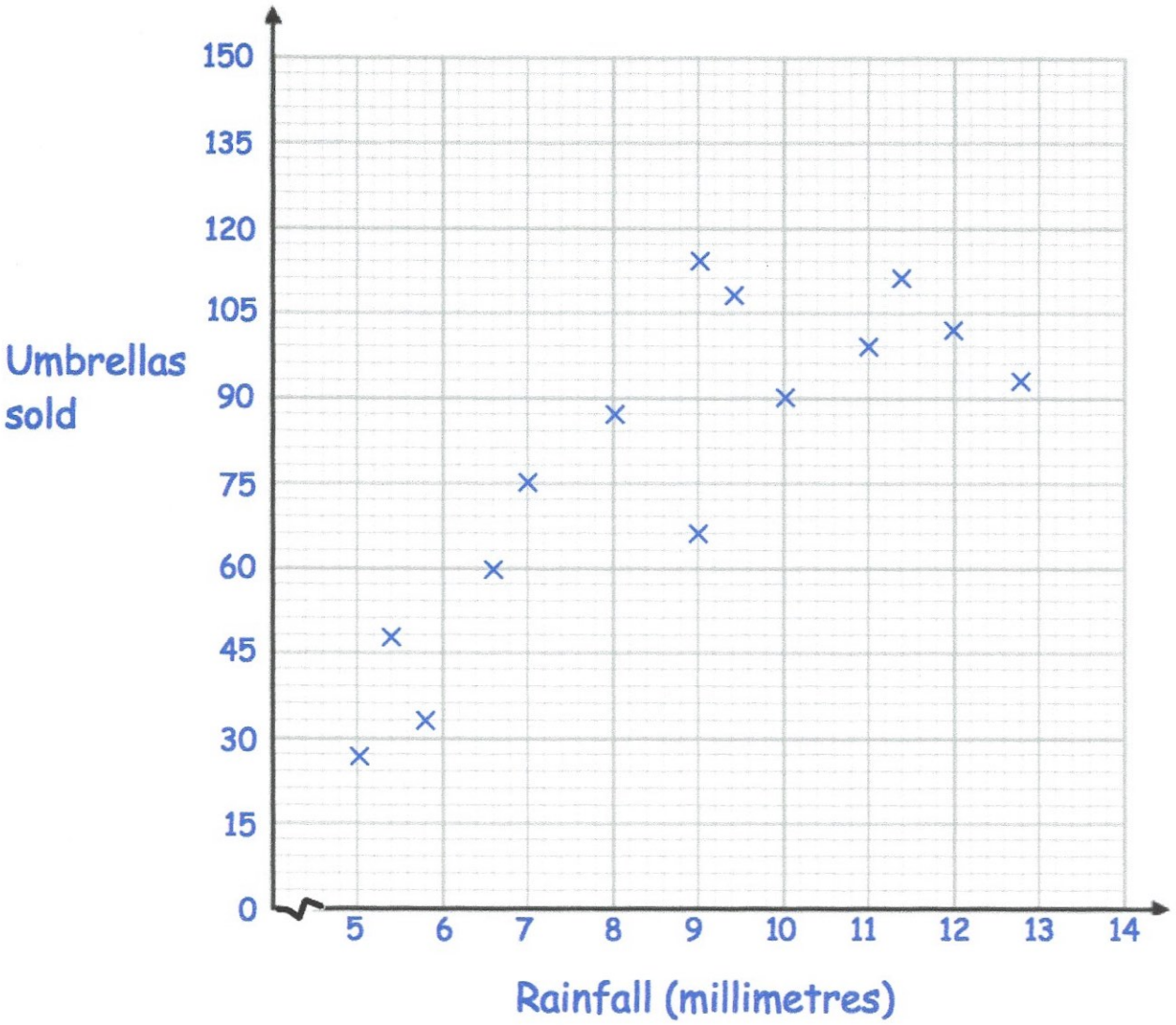
$\frac{16}{51}$

.....

(2)

38. A shop sells umbrellas.

The scatter graph shows information about the number of umbrellas sold each week and the rainfall that week, in millimetres.



(a) Describe the relationship between the rainfall and umbrellas sold.

As the rainfall increases, so does the number of umbrellas sold – positive correlation.

(1)

(b) What is the most number of umbrellas sold in one week?

114

(1)

39. Mervyn plays six games of darts.
His scores are

120 71 80 14 90 117

(a) Work out the range of his scores.

$120 - 14$

106

(2)

(b) Work out the median of his scores.

14 71 80 90 117 120

85

(2)

(c) Work out the mean of his scores.

$14 + 71 + 80 + 90 + 117 + 120 = 492$

$6 \overline{)492}$ $\quad 82$

82

(2)

---

40. The frequency table shows the number of pets owned by the students in Year 11

Number of pets	Frequency
0	13
1	28
2	50
3	9

Write down the modal number of pets owned.

2

(1)

41. The frequency table shows the piano grade of 17 students in a class.

Grade	Frequency
2	3
3	3
4	4
5	3
6	2 → 5
7	2

3 new students, who are all Grade 6, join the class.

The teacher says the median piano grade will increase.
Is she correct?
You must explain your answer.

2 2 2 3 3 3 4 4 4 4 5 5 5 6 6 7 7 median = 4

222 333 4444 555 66666 7 median = 4·5

Yes, the median increases from 4 to 4·5

(3)

---

42. There are 10 students in Class 1 and 20 students in Class 2.
All 30 students sit a test.

The mean score for the students in Class 1 was 80%
The mean score for the students in Class 2 was 70%
Find the mean score of all the students.

10 × 80 = 800

20 × 70 = 1400

2200

2200 ÷ 30 = 73.$\dot{3}$ %

(3)

43. Timothy asked 30 people how long it takes them to get to school.

The table shows some information about his results.

Time (t minutes)	Frequency	fx
$0 < t \leq 10$	2	10
$10 < t \leq 20$	8	120
$20 < t \leq 30$	12	300
$30 < t \leq 40$	7	245
$40 < t \leq 50$	1	45
	30	720

Work out an estimate for the mean time taken.

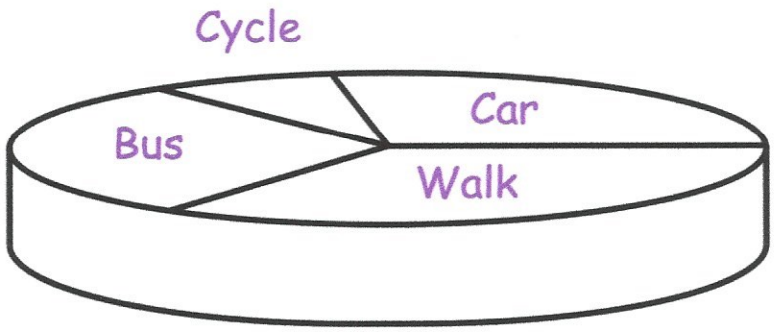
$720 \div 30 = 24$

24 .....minutes

(4)

---

44. Nina drew the pie chart below represent how students travel to school.

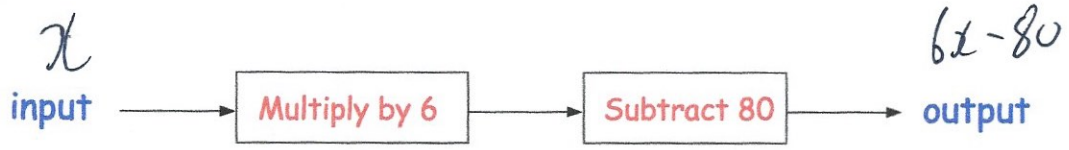


Give one reason why the pie chart is misleading.

As it is 30, it gives the impression that the sectors at the front are much larger.

(1)

45. This function machine multiplies a number by 6 and then subtracts 80.



The input is the same as the output.
Find the input.

$6x - 80 = x$

$5x = 80$

$x = 16$

16

(3)

---

46. (a) Simplify $8a + 3c - 5c + 3a$

$11a - 2c$

(2)

(b) Simplify $3a + 2w - 5a - 9w$

$-2a - 7w$

(2)

(c) Simplify $3y^2 + 2w^2 + y^2 - w^2$

$4y^2 + w^2$

(2)

47. (a) Simplify $5c \times 3c$

$15c^2$

.....

(1)

(b) Simplify $w \times w \times w$

w^3

.....

(1)

---

48. (a) Factorise $21 - 7a$

$7(3 - a)$

.....

(1)

(b) Factorise fully $6x^2 + 9x$

$3x(2x + 3)$

.....

(2)

---

49. Factorise $x^2 - 10x + 16$

$(x - 8)(x - 2)$

.....

(2)

50. Solve

$$\frac{w+3}{4} = 6$$

$w + 3 = 24$

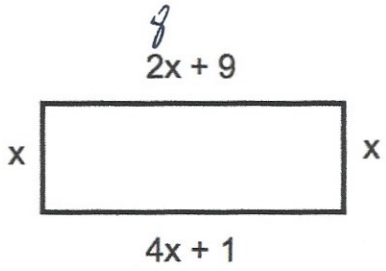
$w = 21$

w = 21

(2)

---

51. A rectangle is shown below.



(a) Explain why $4x + 1 = 2x + 9$

Opposite sides of a rectangle are the same length.

(1)

(b) Find the size of x.

$4x + 1 = 2x + 9$

$2x = 8$

$x = 4$

x = 4 cm

(2)

(c) Work out the area of the rectangle.

$4 \times 17 = 68$

68 cm^2

(2)

52. Solve the inequality $4x + 6 \geq 8$

$4x \geq 2$

$x \geq 0.5$

$x \geq 0.5$

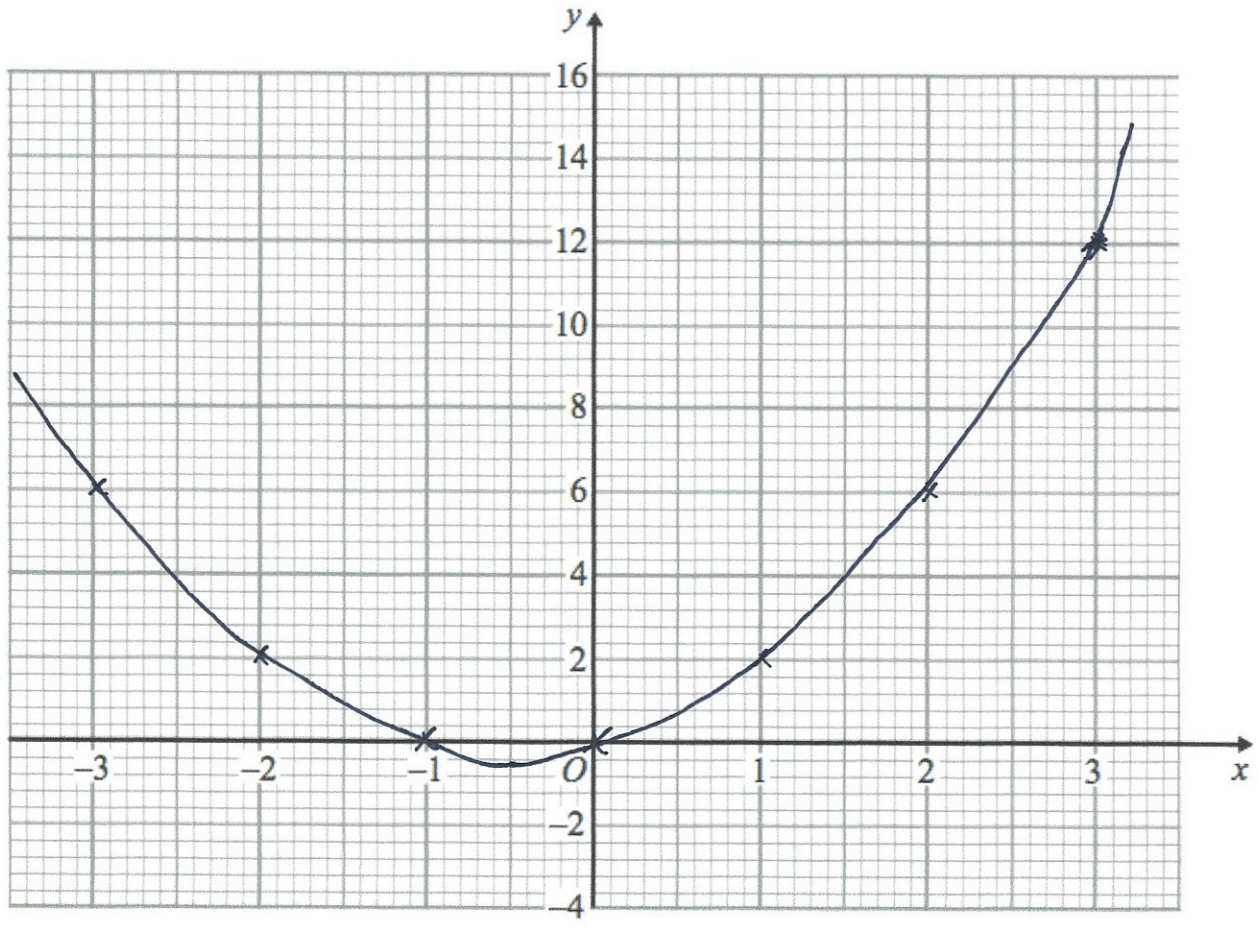
(2)

53. (a) Complete the table of values for $y = x^2 + x$

x	-3	-2	-1	0	1	2	3
y	6	2	0	0	2	6	12

(2)

(b) On the grid, draw the graph of $y = x^2 + x$ for the values of x from -3 to 3.



(2)