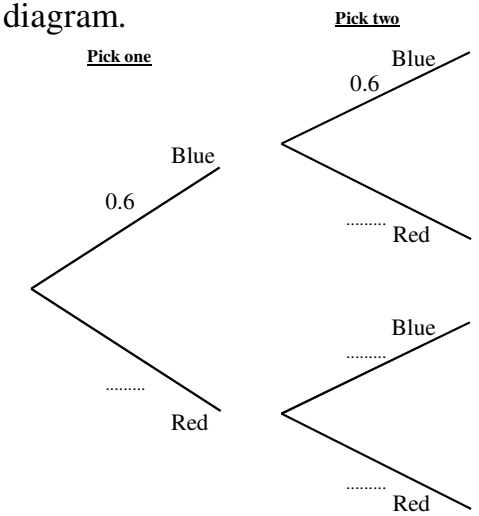
Name .....

Statistics 1

1) Complete the following **replacement** tree diagram.



i) What is the probability of getting two blues?

..... **(R) (A) (G)**

2) The table show the **probabilit**y of getting a colour on a spinner. Complete the table.

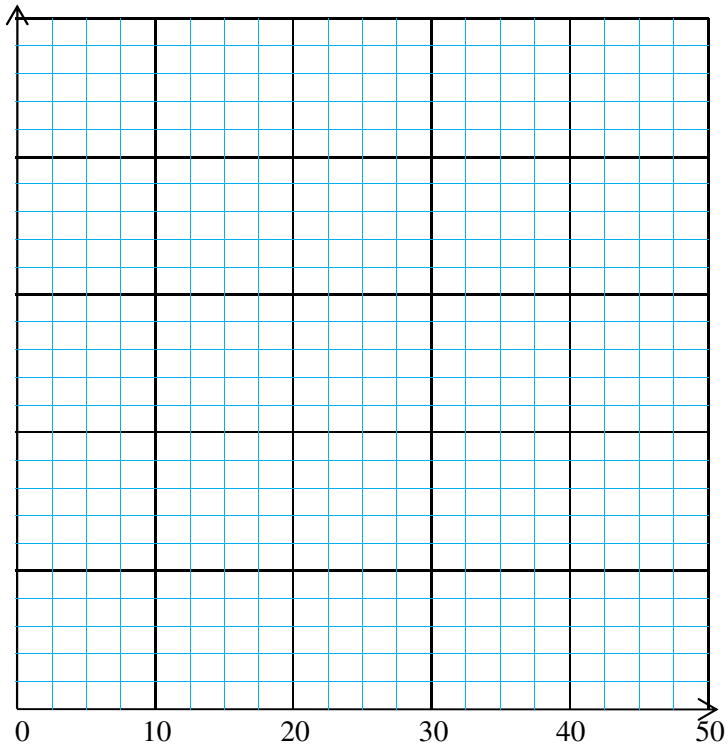
Yellow	0.2
Green	0.1
Red	0.3
Blue	

i) The spinner is spun 200 times. Estimate the number of yellows you would expect.

..... **(R) (A) (G)**

3) Draw a **histogram** for the information given in the table.

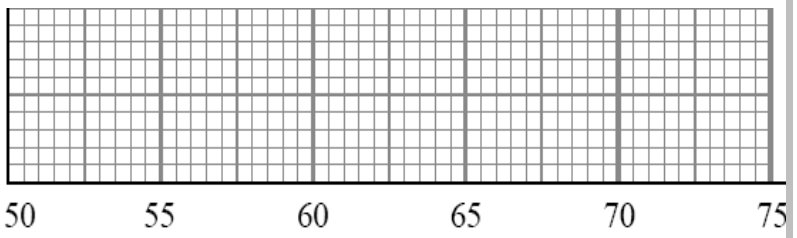
Time (t)	Frequency
$0 < t \leq 10$	16
$10 < t \leq 15$	12
$15 < t \leq 30$	12
$30 < t \leq 50$	68



(R) (A) (G)

4) Draw a **box plot** using the following information.

Lowest Value	52
Lower Quartile	60
Median	63
Upper Quartile	70
Highest Value	74



(R) (A) (G)

5) The **mean** of the numbers shown is 8. Find the missing number.

5	9	12	11	?

..... **(R) (A) (G)**

6) **Estimate the mean** for the information given in the table.

Time (t seconds)	Frequency
$0 < t \leq 20$	4
$20 < t \leq 40$	6
$40 < t \leq 60$	5
$60 < t \leq 80$	7
$80 < t \leq 100$	3

..... **(R) (A) (G)**

7) A **stratified sample** of 50 students is taken.
How many year 7s are picked?

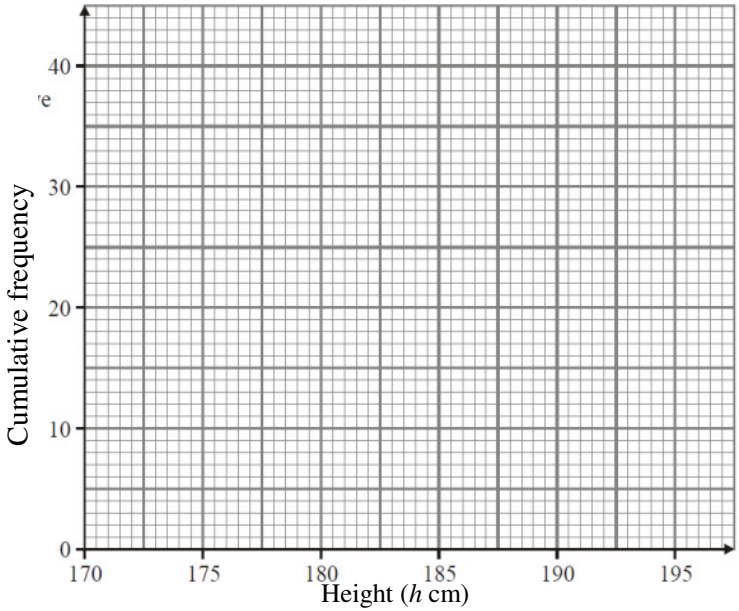
Year 7	135
Year 8	150
Year 9	120
Year 10	154
Year 11	132

..... **(R) (A) (G)**

8) Complete the **cumulative frequency** table and plot the graph.

Height (h cm)	Frequency
$170 \leq h < 175$	5
$175 \leq h < 180$	18
$180 \leq h < 185$	12
$185 \leq h < 190$	4
$190 \leq h < 195$	1

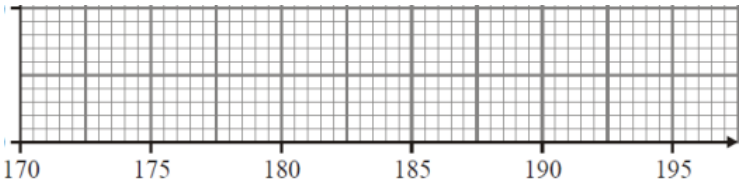
Height (h cm)	Cumulative Frequency
$170 \leq h < 175$	
$170 \leq h < 180$	
$170 \leq h < 185$	
$170 \leq h < 190$	
$170 \leq h < 195$	



b) Find the median.....

c) Find the interquartile range.....

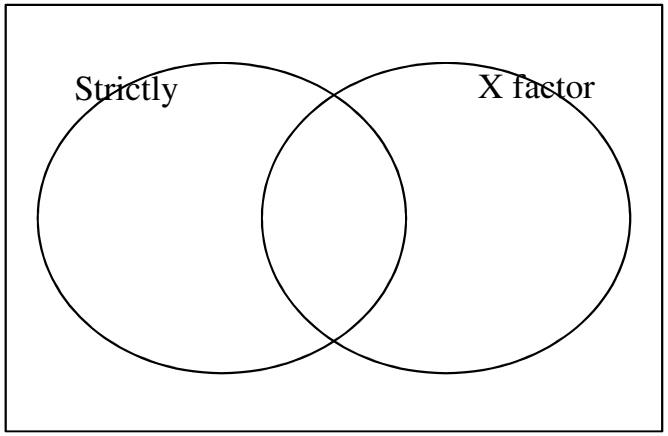
d) The smallest value was172, the largest value was 191. Draw a box plot to show the information.



(R) (A) (G)

9) 70 people are asked about Saturday night TV.

13 like both strictly and X factor.
29 like strictly but not X factor.
A total of 30 people like X factor.



(a) Complete the Venn diagram.

A person is picked at random.

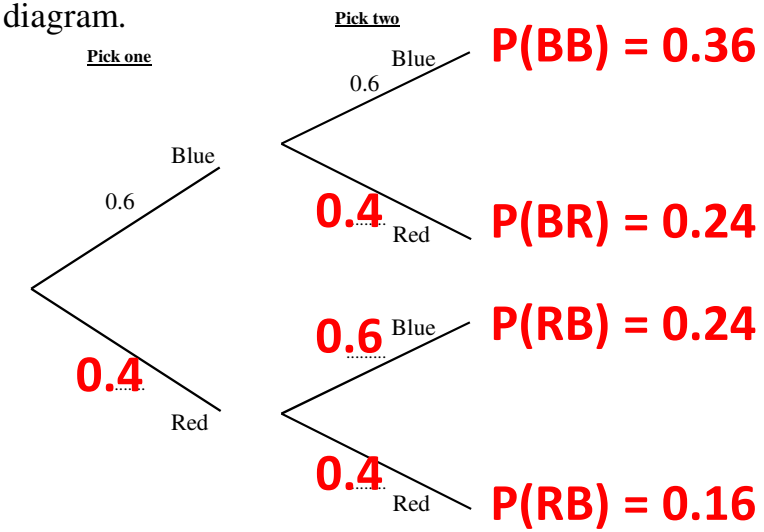
(b) What is the probability that this person doesn't like either TV show?

(R) (A) (G)

Name .....

Statistics 1 - ANSWERS

1) Complete the following **replacement** tree diagram.



P(BB) = 0.36

P(BR) = 0.24

P(RB) = 0.24

P(RB) = 0.16

i) What is the probability of getting two blues?

P(BB) = 0.36

..... **(1)**

2) The table show the **probability** of getting a colour on a spinner. Complete the table.

Yellow	0.2
Green	0.1
Red	0.3
Blue	0.4

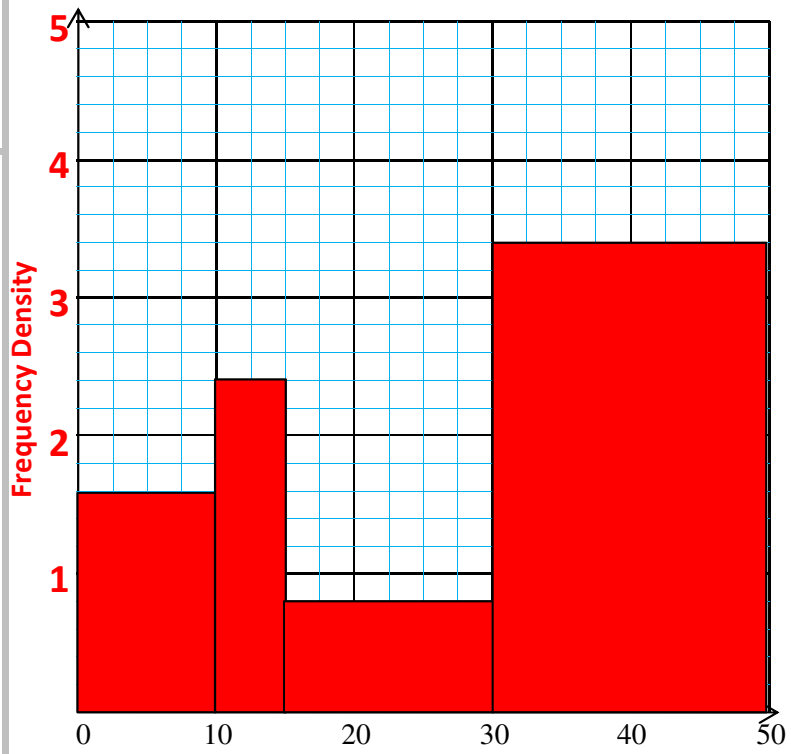
i) The spinner is spun 200 times. Estimate the number of yellows you would expect.

0.2 × 200 = 40

..... **(2)**

3) Draw a **histogram** for the information given in the table.

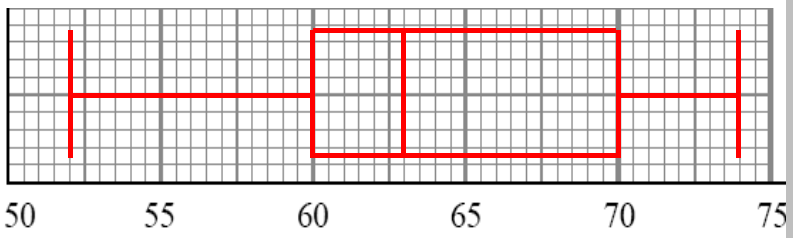
Time (t)	Frequency	Width	Freq Density
$0 < t \leq 10$	16	10	1.6
$10 < t \leq 15$	12	5	2.4
$15 < t \leq 30$	12	15	0.8
$30 < t \leq 50$	68	20	3.4



(1)

4) Draw a **box plot** using the following information.

Lowest Value	52
Lower Quartile	60
Median	63
Upper Quartile	70
Highest Value	74



(1)

5) The **mean** of the numbers shown is 8. Find the missing number.

5 9 12 11 ?

3

..... **(1)**

6) **Estimate the mean** for the information given in the table.

Time (t seconds)	Frequency	Midpoint	Freq x Mid
$0 < t \leq 20$	4	10	40
$20 < t \leq 40$	6	30	180
$40 < t \leq 60$	5	50	250
$60 < t \leq 80$	7	70	490
$80 < t \leq 100$	3	90	270
Total	25		1230

1230 ÷ 25 = 49.2

49.2 ..... (1)

7) A **stratified sample** of 50 students is taken.
How many year 7s are picked?

Year 7	135
Year 8	150
Year 9	120
Year 10	154
Year 11	132

Total 691

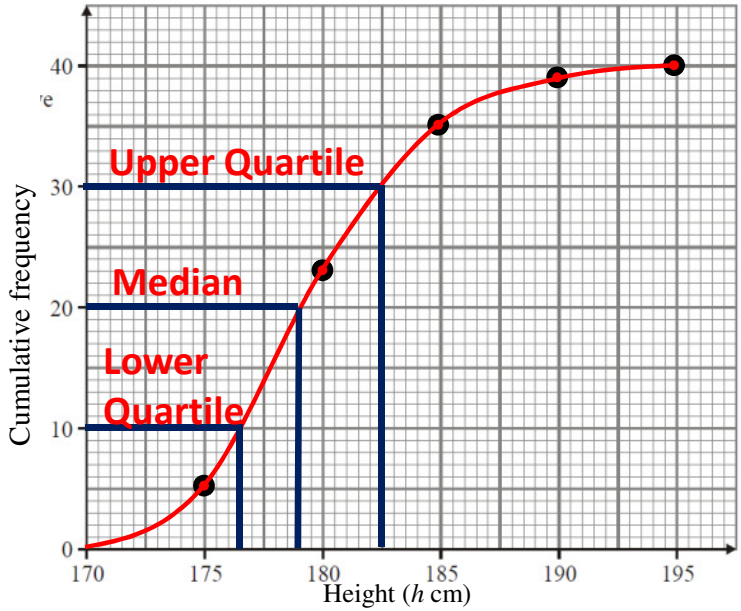
$\frac{135}{691} \times 50 = 9.768$

10 students ..... (1)

8) Complete the **cumulative frequency** table and plot the graph.

Height (h cm)	Frequency
$170 \leq h < 175$	5
$175 \leq h < 180$	18
$180 \leq h < 185$	12
$185 \leq h < 190$	4
$190 \leq h < 195$	1

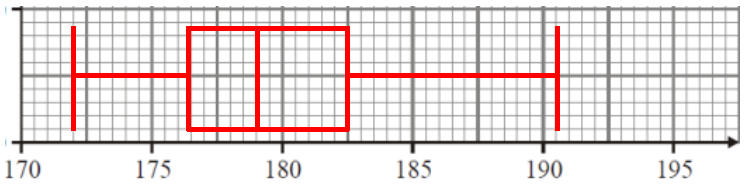
Height (h cm)	Cumulative Frequency
$170 \leq h < 175$	5
$170 \leq h < 180$	23
$170 \leq h < 185$	35
$170 \leq h < 190$	39
$170 \leq h < 195$	40



b) Find the median 179cm ..... (1)

c) Find the interquartile range 182.5 – 176.5 = 6 ..... (1)

d) The smallest value was172, the largest value was 191. Draw a box plot to show the information.



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13 like both strictly and X factor.
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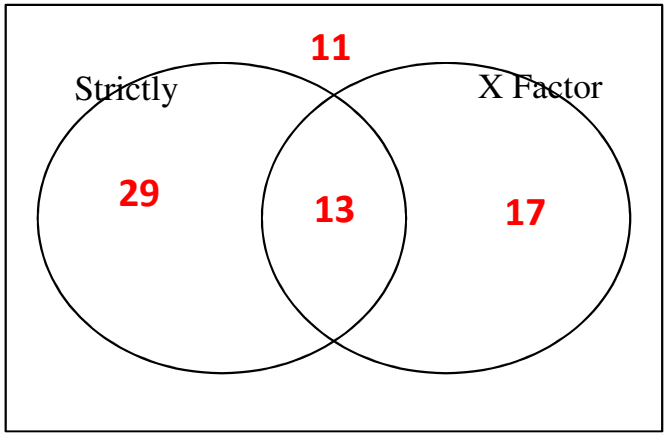


(a) Complete the Venn diagram.

A person is picked at random.

(b) What is the probability that this person doesn't like either TV show?

$\frac{11}{70}$

Name .....

Number 1

1) Without a calculator work out.

i) 6.34×41

.....

ii) $206 \div 4$

..... **(R) (A) (G)**

2) Work out

$$2\frac{3}{5} + 3\frac{1}{6}$$

..... **(R) (A) (G)**

3) Write the following in standard form.

i) 0.00073

.....

ii) $2 \times 10^3 \times 4 \times 10^4$

..... **(R) (A) (G)**

4) Share 156 in the ratio 2:3:7

..... **(R) (A) (G)**

5) Convert to percentages

i) 17 out of 20 (Without a calculator)

.....

ii) 23 out of 48 (With a calculator)

..... **(R) (A) (G)**

6) Find the best value.

Co-op	**Tesco**
Mars Bars 3 for £1.69	Mars Bars 5 for £2.19

..... **(R) (A) (G)**

7) A car costs £12,000 new. After 3 years it costs £7,500. Work out the percentage loss.

..... **(R) (A) (G)**

8) Evaluate

$$\frac{3}{8} \times \frac{4}{6}$$

..... **(R) (A) (G)**

9) Work out

$$\frac{5}{11} \text{ of } 99$$

..... **(R) (A) (G)**

10) Work out

$$\frac{3}{7} \div 2\frac{4}{5}$$

..... **(R) (A) (G)**

11) Write in the form $a\sqrt{b}$.

i) $\sqrt{24}$

.....

ii) $\sqrt{20} \times \sqrt{2}$

..... **(R) (A) (G)**

12) Write $0.\dot{4}\dot{9}$ as a fraction.

..... **(R) (A) (G)**

13) Find the total value if £2000 is invested:

i) For 3 years at 4% **simple** interest.

.....

ii) For 3 years at 4% **compound** interest.

..... **(R) (A) (G)**

14) A car **depreciates** in value by 20% each year. Find its value after 4 years if it originally cost £8000.

..... **(R) (A) (G)**

15) **Estimate** the answer to 31.55×21.78

..... **(R) (A) (G)**

16) **Increase** £550 by 45%.

..... **(R) (A) (G)**

17) **Rationalise**

$$\frac{2}{\sqrt{3}}$$

..... **(R) (A) (G)**

18) Evaluate

i) 5^0

.....

ii) $49^{1/2}$

.....

iii) 3^{-2}

..... **(R) (A) (G)**

19) The exchange rate between pounds and dollars is:

£1 = $1.38

i) Convert £320 into dollars.

.....

ii) Convert $500 into pounds.

..... **(R) (A) (G)**

20) In a sale a TV is reduced by 15%.Its sale price is £255. Find its original price.

..... **(R) (A) (G)**

Use a calculator only if you see the symbol, otherwise you must show all of your workings.
You may be asked to redo the homework if you haven't.

Total.....

Name .....

Number 1 - ANSWERS

1) Without a calculator work out.

i) 6.34×41

259.94 ..... **(1)**

ii) $206 \div 4$

51.5 ..... **(1)**

2) Work out

$$2\frac{3}{5} + 3\frac{1}{6}$$

$5\frac{23}{30}$ ..... **(1)**

3) Write the following in standard form.

i) 0.00073

7.3×10^{-4} ..... **(1)**

ii) $2 \times 10^3 \times 4 \times 10^4$

8×10^7 ..... **(1)**

4) Share 156 in the ratio 2:3:7

26:39:91 ..... **(1)**

5) Convert to percentages

i) 17 out of 20
(Without a calculator)

85% .....

ii) 23 out of 48
(With a calculator)

47.9% ..... **(1)**

6) Find the best value.

Co-op	**Tesco**
Mars Bars 3 for £1.69	Mars Bars 5 for £2.19

Tesco is the cheapest:
1 bar for £0.438 ..... **(1)**

7) A car costs £12,000 new. After 3 years it costs £7,500.
Work out the percentage loss.

37.5% ..... **(1)**

8) Evaluate

$$\frac{3}{8} \times \frac{4}{6}$$

$\frac{1}{4}$ ..... **(1)**

9) Work out

$\frac{5}{11}$ of 99

45 ..... **(1)**

10) Work out

$$\frac{3}{7} \div 2\frac{4}{5}$$

$\frac{15}{98}$ ..... **(1)**

11) Write in the form $a\sqrt{b}$

i) $\sqrt{24}$

2√6 ..... **(1)**

ii) $\sqrt{20} \times \sqrt{2}$

2√10 ..... **(1)**

12) Write $0.\dot{4}\dot{9}$ as a fraction.

$\frac{49}{99}$ ..... **(1)**

13) Find the total value if £2000 is invested:

i) For 3 years at 4% **simple** interest.

£2240 ..... **(1)**

ii) For 3 years at 4% **compound** interest.

£2249.73 ..... **(1)**

14) A car **depreciates** in value by 20% each year. Find its value after 4 years if it originally cost £8000.

£3276.80 ..... **(1)**

15) **Estimate** the answer to 31.55×21.78

600 ..... **(1)**

16) **Increase** £550 by 45%

£797.50 ..... **(1)**

17) **Rationalise**

$\frac{2}{\sqrt{3}}$

$\frac{2\sqrt{3}}{3}$ ..... **(1)**

18) Evaluate

i) 5^0

1 .....

ii) $49^{1/2}$

7 .....

iii) 3^{-2}

$\frac{1}{9}$ ..... **(1)**

19) The exchange rate between pounds and dollars is:

£1 = $1.38

i) Convert £320 into dollars.

$441.60 ..... **(1)**

i) Convert $500 into pounds.

£362.32 ..... **(1)**

20) In a sale a TV is reduced by 15%. It's sale price is £255. Find its original price.

£300 ..... **(1)**

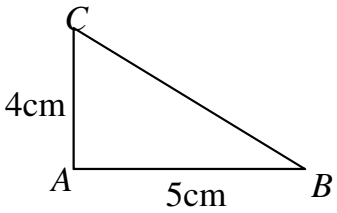
You must show all of your workings.
You may be asked to redo the homework if you haven't.

Total .....

Name .....

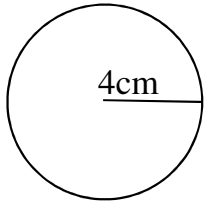
Geometry 1

1) Find *BC*.
Answer to 1 decimal place.



..... **(R) (A) (G)**

2) For the circle find:



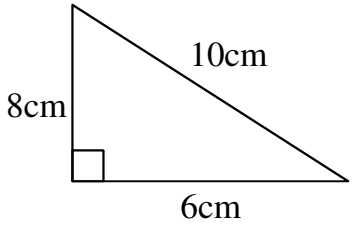
i) The area

.....

ii) Circumference

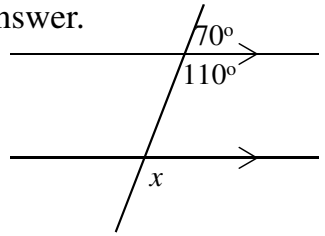
..... **(R) (A) (G)**

3) Find the area.



..... **(R) (A) (G)**

4) Find angle *x*.
Give a reason for your answer.

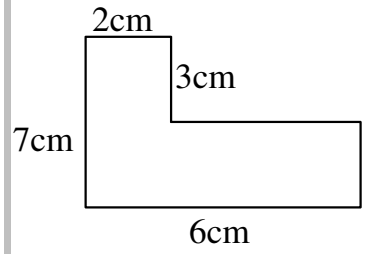


x = ...

Reasons:.....

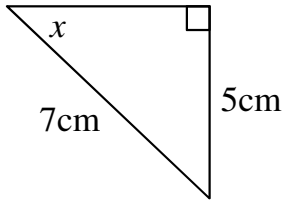
..... **(R) (A) (G)**

5) Find the area



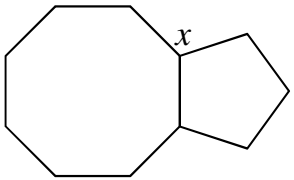
..... **(R) (A) (G)**

6) Find angle *x*.
Answer to 1 decimal place.



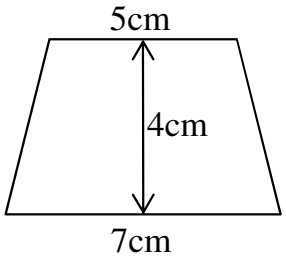
..... **(R) (A) (G)**

7) The diagram shows two regular polygons. Find *x*.



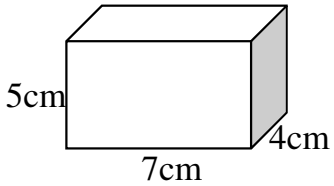
x ..... **(R) (A) (G)**

8) Find the area



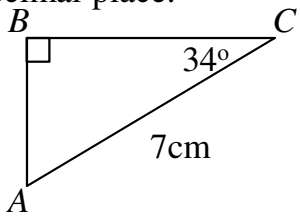
..... **(R) (A) (G)**

9) Find the volume.



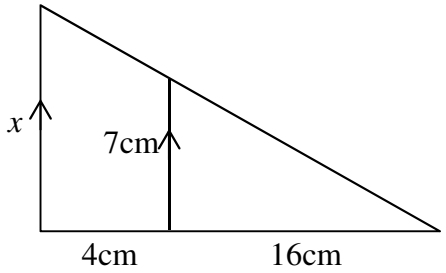
..... **(R) (A) (G)**

10) Find the length of *BC*. Answer to 1 decimal place.



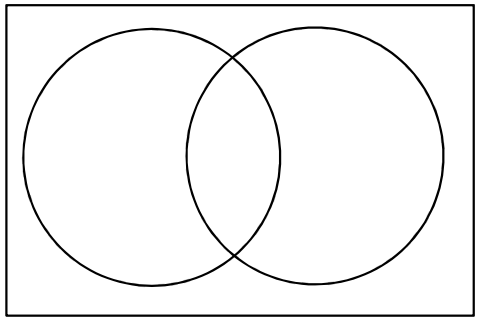
..... **(R) (A) (G)**

11) Find the length of x.



..... **(R) (A) (G)**

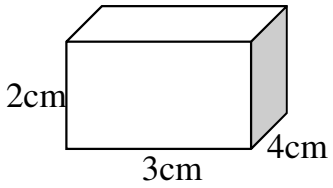
12) $E = \{1,2,3,4,5,6,7,8,9,10\}$
A = {Even Numbers}
B = {Prime Numbers}



i) $A \cap B$ .....

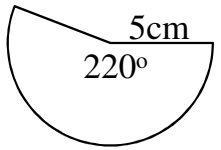
ii) $A \cup B$ ..... **(R) (A) (G)**

13) Find the surface area.



..... **(R) (A) (G)**

14) For the sector find:



i) The area

.....

ii) The arc length

..... **(R) (A) (G)**

15) Tobias drives 192 km in 3 hours 15 minutes.
Work out Tobias' average speed.

..... **(R) (A) (G)**

16) A barrel of natural gas has a mass of 136 kg.
The density of natural gas is 711 kg/m^3.
Work out the volume of the barrel.
Answer to 3 significant figures.

..... **(R) (A) (G)**

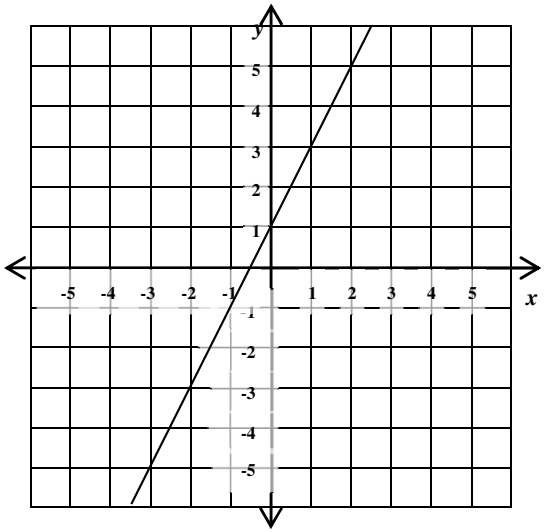
17) **a** and **b** are column vectors.

$\mathbf{a} = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$

i) Find $\mathbf{a} + 2\mathbf{b}$

..... **(R) (A) (G)**

18) What is the equation of the line. Write it in the form $y = mx + c$

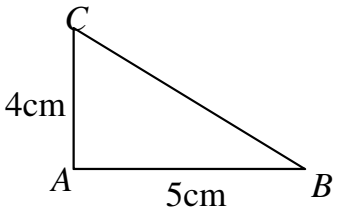


..... **(R) (A) (G)**

Name .....

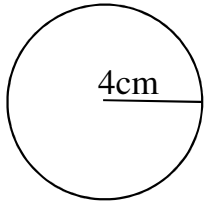
Geometry 1 - ANSWERS

1) Find *BC*.
Answer to 1 decimal place.



6.4cm ..... (1)

2) For the circle find:



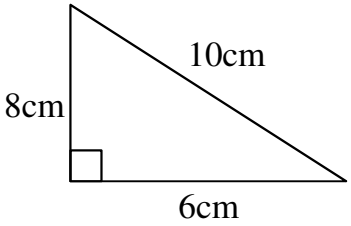
i) The area

50.3cm² .....

ii) The circumference

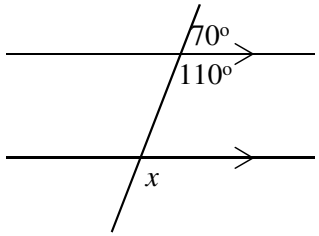
25.1cm ..... (R) (A) (G)

3) Find the area.



24cm² ..... (1)

4) Find angle *x*. Give a reason for your answer.

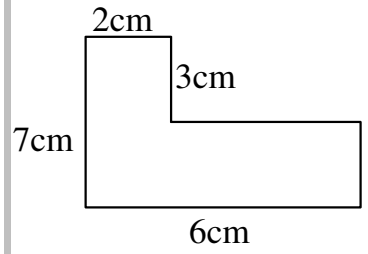


110° ..... (1)

Corresponding angles are equal .....

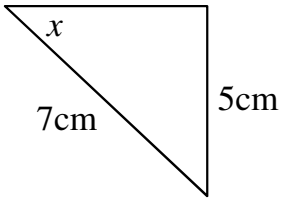
..... (1)

5) Find the area



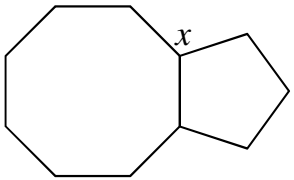
30cm² ..... (1)

6) Find angle *x*. Answer to 1 decimal place.



45.6° ..... (1)

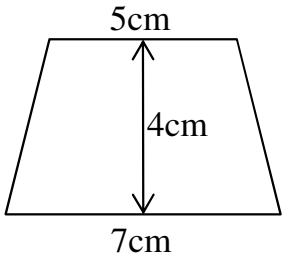
7) The diagram shows two regular polygons. Find *x*.



117°

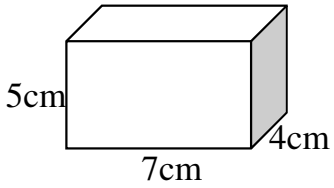
x ..... (R) (A) (G)

8) Find the area



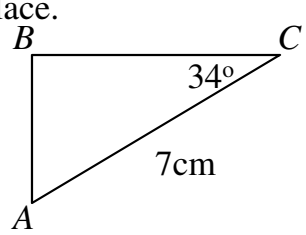
24cm² ..... (1)

9) Find the volume.



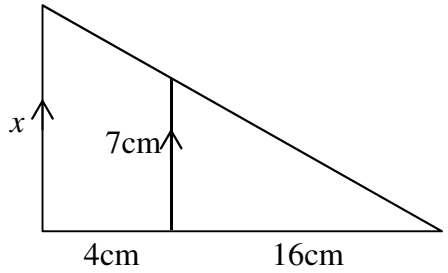
140cm³ ..... (1)

10) Find the length of *BC*. Answer to 1 decimal place.



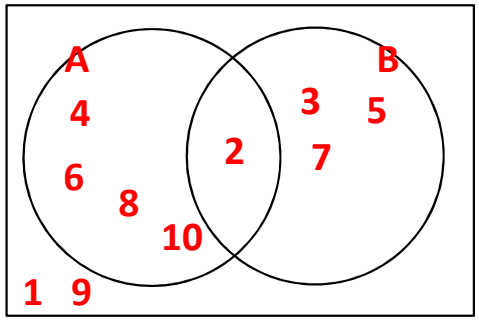
5.8cm ..... (1)

11) Find the length of x.



8.75cm (1) (R) (A) (G)

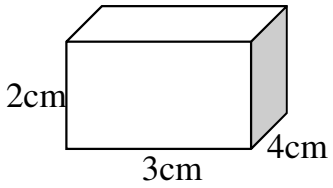
12) $E = \{1,2,3,4,5,6,7,8,9,10\}$
A = {Even Numbers}
B = {Prime Numbers}



i) $A \cap B$ **2** (R) (A) (G)

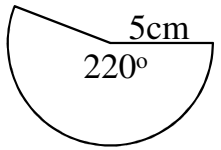
ii) $A \cup B$ **2, 3, 4, 5, 6, 7, 8, 10** (R) (A) (G)

13) Find the surface area.



52cm² (R) (A) (G)

14) For the sector find:



i) The area

48.0cm² (R) (A) (G)

ii) The arc length

19.2cm (R) (A) (G)

15) Tobias drives 192 km in
3 hours 15 minutes.
Work out Tobias' average speed.

59 km/h (R) (A) (G)

16) A barrel of natural gas has a mass of 136 kg.
The density of natural gas is 711 kg/m^3.
Work out the volume of the barrel.
Answer to 3 significant figures.

0.191 m³ (R) (A) (G)

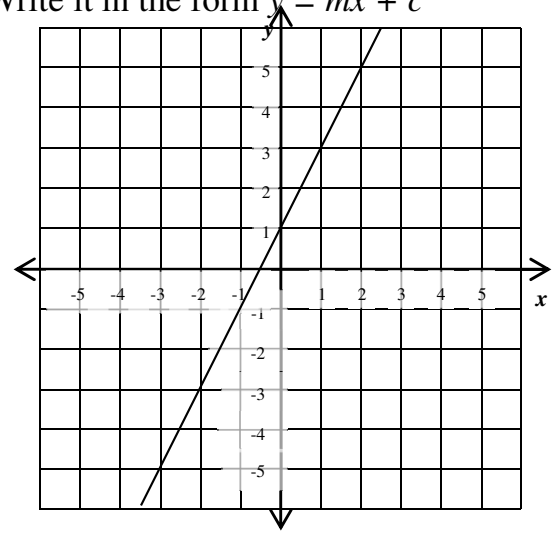
17) **a** and **b** are column vectors.

$\mathbf{a} = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$

i) Find $\mathbf{a} + 2\mathbf{b}$

$\begin{pmatrix} 8 \\ 14 \end{pmatrix}$

18) What is the equation of the line.
Write it in the form $y = mx + c$



y = 2x + 1

Name .....

Algebra 1

1) Expand and simplify

$5(x + 3) + 2(2x + 4)$

..... **(R) (A) (G)**

2) Simplify

$3a + 7b + 6a + 2b$

..... **(R) (A) (G)**

3) Solve

$5y + 2 = 2y + 17$

..... **(R) (A) (G)**

4) Factorise fully

$6x + 15$

..... **(R) (A) (G)**

5) List the integers that satisfy the inequality

$-4 < 2n \leq 2$

..... **(R) (A) (G)**

6) Expand and simplify

$(x + 3)(x + 5)$

..... **(R) (A) (G)**

7) Simplify

i) $x^5 \times x^3$

.....

ii) $y^8 \div y^2$

.....

iii) $(a^2)^8$

..... **(R) (A) (G)**

8) Factorise

$x^2 + 5x + 6$

..... **(R) (A) (G)**

9) Solve the inequality

$3x - 2 < 13$

..... **(R) (A) (G)**

10) $\boldsymbol{Q = 2c + d}$

$c = 3$

$d = 2$

Work out the value of Q.

..... **(R) (A) (G)**

11) Expand

$(x + 2)(x + 3)(x + 4)$

..... **(R) (A) (G)**

12) Factorise fully

$x^2 - 4$

..... **(R) (A) (G)**

13) Make x the subject of the formula.

$3x + 2 = t$

..... **(R) (A) (G)**

14) Factorise fully

$2x^2 + 5x + 3$

..... **(R) (A) (G)**

15) Solve

$2x + 3y = 13$
$3x + 4y = 18$

x.....

y ..... **(R) (A) (G)**

16) Simplify

$$\frac{2x + 6}{x^2 + 5x + 6}$$

..... **(R) (A) (G)**

17) Solve. Answer to 3 significant figures.

$2x^2 + 9x + 3 = 0$

x.....

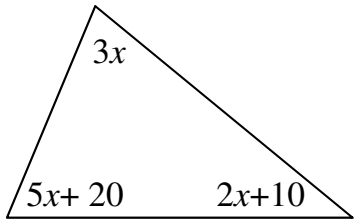
x ..... **(R) (A) (G)**

18) $f(x) = 3x + 5$

Work out $f(2)$

..... **(R) (A) (G)**

19) Find x.



..... **(R) (A) (G)**

20) Find the nth term of the sequence

3 6 11 18

..... **(R) (A) (G)**

Show your workings where appropriate.
You may be asked to redo the homework if you haven't.

Total.....

Name .....

Algebra 1 - ANSWERS

1) Expand and simplify

$5(x + 3) + 2(2x + 4)$

9x + 23

..... **(1)**

2) Simplify

$3a + 7b + 6a + 2b$

9a + 9b

..... **(1)**

3) Solve

$5y + 2 = 2y + 17$

y = 5

..... **(1)**

4) Factorise fully

$6x + 15$

3(2x+5)

..... **(1)**

5) List the integers that satisfy the inequality

$-4 < 2n \leq 2$

-1,0,1

..... **(1)**

6) Expand and simplify

$(x + 3)(x + 5)$

$x^2 + 8x + 15$

..... **(1)**

7) Simplify

i) $x^5 \times x^3$

x^8

..... **(1)**

ii) $y^8 \div y^2$

y^6

..... **(1)**

iii) $(a^2)^8$

a^{16}

..... **(1)**

8) Factorise

$x^2 + 5x + 6$

(x + 2)(x + 3)

..... **(1)**

9) Solve the inequality

$3x - 2 < 13$

x < 5

..... **(1)**

10) $\boldsymbol{Q = 2c + d}$

$c = 3$

$d = 2$

Work out the value of Q.

8

..... **(1)**

11) Expand

$(x + 2)(x + 3)(x + 4)$

$x^3 + 9x^2 + 26x + 24$ ..... (1)

12) Factorise fully

$x^2 - 4$

$(x+2)(x-2)$ ..... (1)

13) Make x the subject of the formula.

$3x + 2 = t$

$X = \frac{t - 2}{3}$ ..... (1)

14) Factorise fully

$2x^2 + 5x + 3$

$(2x+3)(x+1)$ ..... (1)

15) Solve

$2x + 3y = 13$

$3x + 4y = 18$

$x = 2$ ..... (1)

$y = 3$ ..... (1)

16) Simplify

$$\frac{2x + 6}{x^2 + 5x + 6}$$

$\frac{2}{x + 2}$ ..... (1)

17) Solve. Answer to 3 significant figures.

$2x^2 + 9x + 3 = 0$

$x = -0.363$ ..... (1)

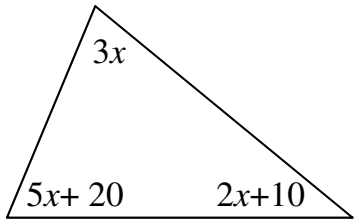
$x = -4.14$ ..... (1)

18) $f(x) = 3x + 5$

Work out $f(2)$

11 ..... (1)

19) Find x.



$x = 15$ ..... (1)

20) Find the nth term of the sequence

3 6 11 18

$n^2 + 2$ ..... (1)

Show your workings where appropriate.
You may be asked to redo the homework if you haven't.

Total .....