Name: _____ 5-a-day Foundation Plus

**6th January**

Corbettmaths

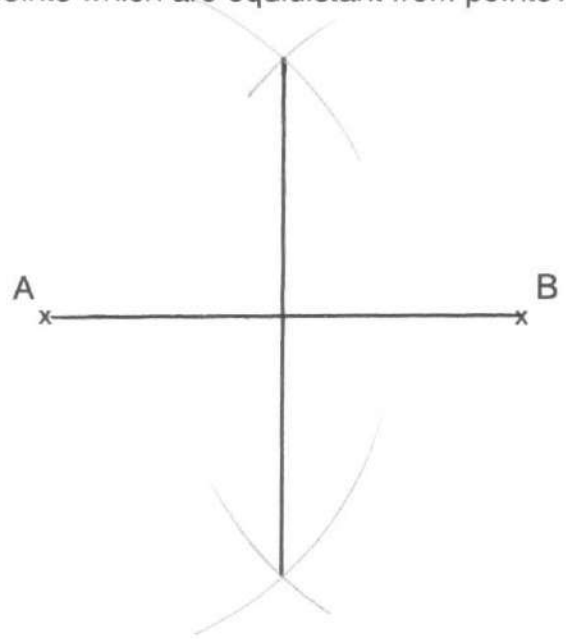
Estimate the value of

$$\frac{803 \times 2.97}{0.613} \approx$$

$$\frac{800 \times 3}{0.6} = \frac{2400}{0.6} = \frac{24000}{6}$$

$$= 4000$$

Draw the locus of all points which are equidistant from points A and B.




Make *t* the subject of the formula

$$v = u + 10t$$

$$-u \quad -u$$

$$v - u = 10t$$

$$t = \frac{v-u}{10}$$

Write 650000 in standard form

$$6.5 \times 10^5$$

Write 0.021 in standard form

$$2.1 \times 10^{-2}$$

Name: _____ 5-a-day Foundation Plus

**7th January**

Corbettmaths

What is the reciprocal of 4?

$\frac{1}{4}$

What is the reciprocal of 0.5?

2

$1\frac{1}{2} \times 3\frac{1}{3}$

$\frac{3}{2} \times \frac{10}{3} = \frac{30}{6} = 5$

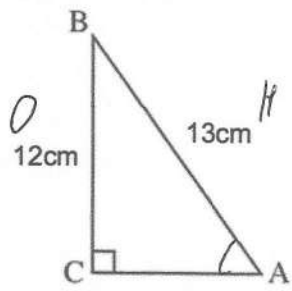
5

Martin runs 2 kilometres in 2 minutes.

Calculate his average speed.
Give your answer in m/s

2 km in 2 mins
1 km / min
1000 m / min

16.6 m/s

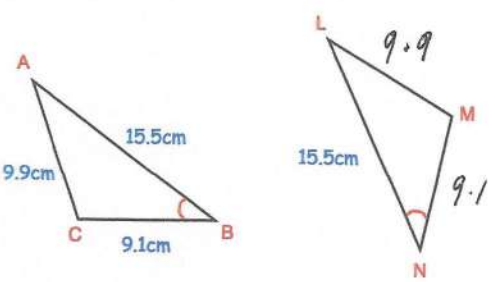



Calculate the size of angle BAC.

$\sin BAC = \frac{12}{13}$

$BAC = \sin^{-1} \frac{12}{13}$

$= 67.38°$




ABC and LMN are congruent triangles.
Angle B = Angle N

Write down the length of LM.

9.9cm

Name: _____ 5-a-day Foundation Plus

**12th January**

Corbettmaths

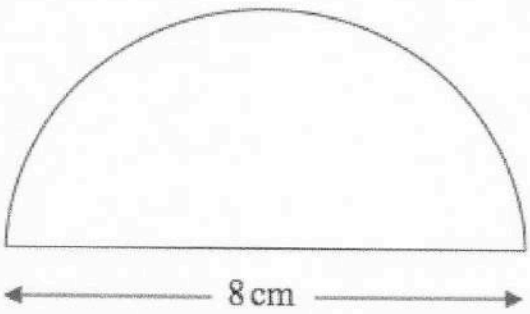
| | French | German |
|---|---|---|
| Male | 14 | 6 |
| Female | 12 | 8 |

$14 + 12 + 6 + 8 = 40$

A student is selected at random.

What is probability of the student studying German?

$\frac{14}{40} = \frac{7}{20}$

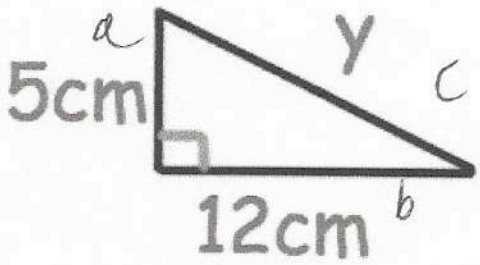



Calculate the area

$(\pi \times 4^2) \div 2$

$25.133 cm^2$

or $8\pi\ cm^2$




Find y

$a^2 + b^2 = c^2$

$5^2 + 12^2 = y^2$

$25 + 144 = y^2$

$169 = y^2$

$y = 13 cm$

Complete this table for the graph $y = x^2+1$

| x | -2 | -1 | 0 | 1 | 2 |
|---|---|---|---|---|---|
| y | 5 | 2 | 1 | 2 | 5 |

$\underline{a} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$ $\underline{b} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$

Work out $2\underline{a} + \underline{b}$ as a column vector

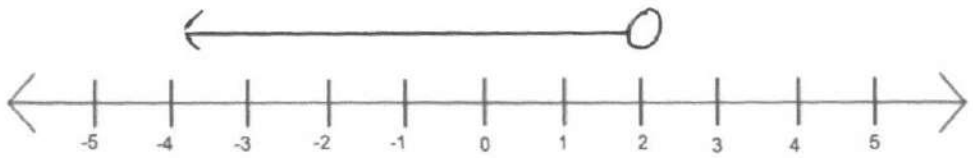
$2\underline{a} = \begin{pmatrix} 4 \\ -2 \end{pmatrix}$ $\underline{b} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$

$2\underline{a} + \underline{b} = \begin{pmatrix} 9 \\ 1 \end{pmatrix}$

**13th January**

Corbettmaths

Draw $x < 2$ on the number line.




Factorise $x^2 + 12x + 35$

$(x+5)(x+7)$

Factorise $x^2 - 10x + 25$

$(x-5)(x-5)$

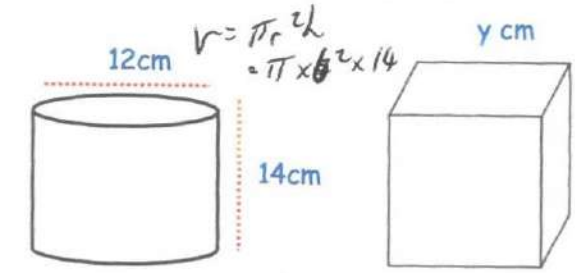
A bicycle wheel has diameter 80cm.
The bicycle travels 50m.

How many complete revolutions does the wheel make?

$C = \pi \times 0.8$
$= 2.513...$ m

$50 \div 2.513... = 19.89...$

19 complete revolutions




$V = \pi r^2 h$
$= \pi \times 6^2 \times 14$

$1583.362...$ cm$^3$

A cube has side length y cm.
The cylinder and cube has the same volume.
Find y

$\sqrt[3]{1583.362...}$

$11.655$ cm

Solve the simultaneous equations

$5x + 3y = 41$
$2x + 3y = 20$ subtract

$3x = 21$

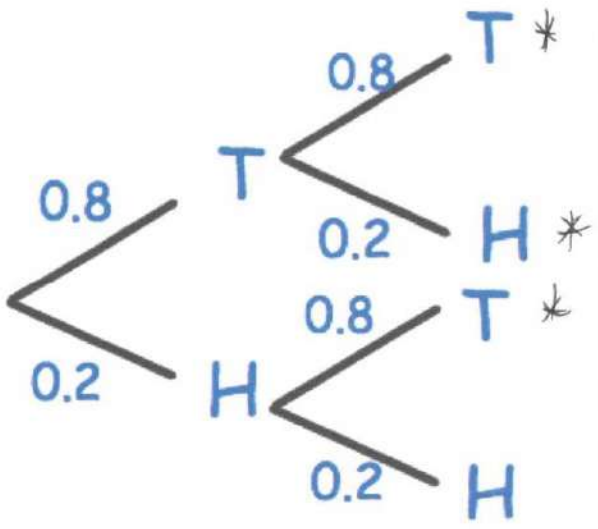
Do not use trial and improvement

$14 + 3y = 20$

$x = 7$ $y = 2$

**19th January**

Corbettmaths




A biased coin is flipped twice.

Work out the probability of a tail and a tail.

$0.8 \times 0.8 = 0.64$

Work out the probability of at least one tail.

$0.64 + 0.16 + 0.16$

$= 0.96$

Solve $x^2 - 2x - 15 = 0$

$(x - 5)(x + 3) = 0$

$x = 5$ or $x = -3$

**Estimate $\frac{87.8 \times 2.1}{0.199}$**

$\approx \frac{90 \times 2}{0.2}$

$\frac{180}{0.2} = \frac{1800}{2}$

$= 900$

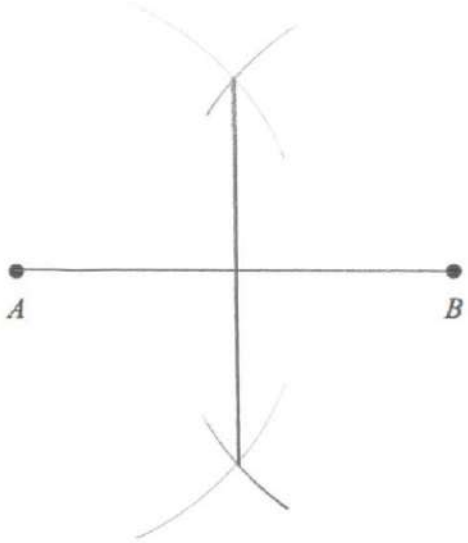
5.62 has been truncated to two decimal places.

Write down an inequality to show the range of possible actual values.

$5.62 \leq n < 5.63$

**20th January**

Corbettmaths




Construct the locus of points that are equidistant from A and B

$1\frac{4}{5} \div 2\frac{3}{4}$

$\frac{9}{5} \div \frac{11}{4}$

$\frac{9}{5} \times \frac{4}{11} = \frac{36}{55}$

A container exerts a force of 400 Newtons on the floor. The pressure on the table is 50 Newtons/m²

$P = \frac{F}{A}$

Calculate the area of the container that is in contact with the table.

$A = \frac{F}{P} = \frac{400}{50} = 8m^2$

Factorise $x^2 + 8x + 16$

$(x+4)(x+4)$

Factorise $x^2 - 121$

$(x+11)(x-11)$

**26th January**

Corbettmaths

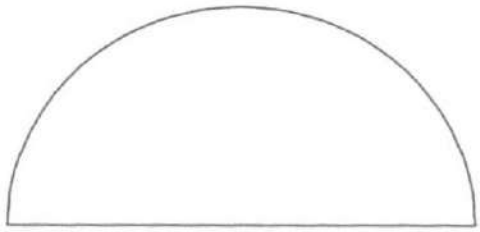
The angles in a triangle are in the ratio 1: 2: 9.

What is the size of each angle?

$1+2+9=12$

$180 \div 12 = 15$

$15^\circ, 30^\circ, 135^\circ$

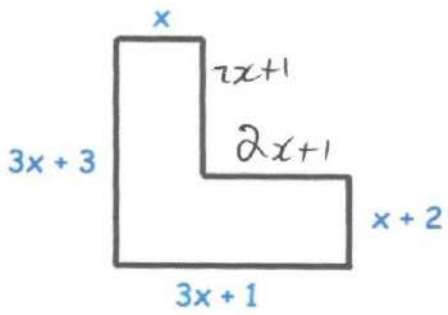



Find the perimeter

$\frac{1}{2}(\pi \times 12) = 18.849...$

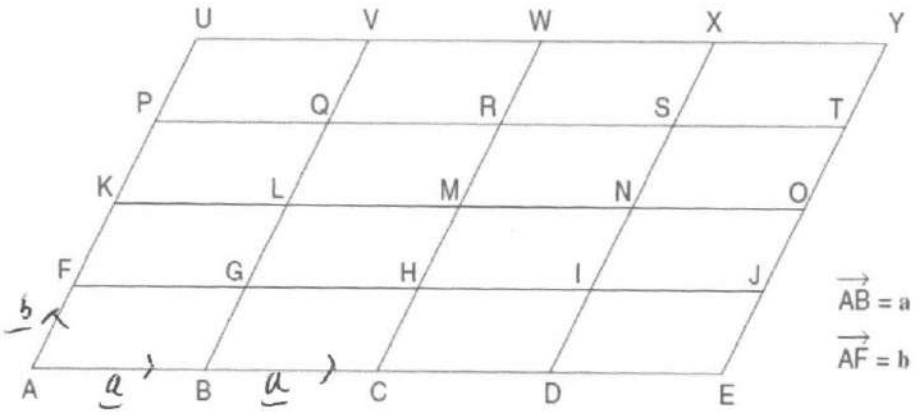
$18.849... + 12 =$

$30.85\text{cm}$ to 2dp




Find an expression for the perimeter.

$12x + 8$




Write a vector for $\overrightarrow{AH}$ in terms of **a** and **b**

$2\underline{a} + \underline{b}$

Write a vector for $\overrightarrow{DU}$ in terms of **a** and **b**

$-3\underline{a} + 3\underline{b}$

**27th January**

Corbettmaths

Find the nth term

$\frac{3}{7}, \frac{6}{12}, \frac{9}{17}, \frac{12}{22}, \ldots \ldots$

$\frac{3n}{5n+2}$

Find the 50th term

$\frac{150}{252} = \frac{25}{42}$

Expand and simplify

$(y + 2)(y + 5)$

$y^2 + 7y + 10$

Expand and simplify

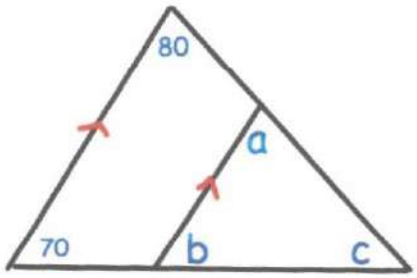
$(y - 5)^2$ $(y-5)(y-5)$

$y^2 - 10y + 25$

The speed limit on a road is 50 mph.
A car drives 20 miles in 25 minutes.
Is the car breaking the speed limit?

20 miles in 25 mins
0.8 miles in 1 minute
48 miles in 60 mins 48mph

No




Find the size of a, b and c

$a = 80°$

$b = 70°$

$C = 30°$

Work out five million multiplied by three hundred thousand.

Give your answer in standard form.

$5,000,000 \times 300,000$

$= 1,500,000,000,000$

$1.5 \times 10^{12}$

**2nd February**

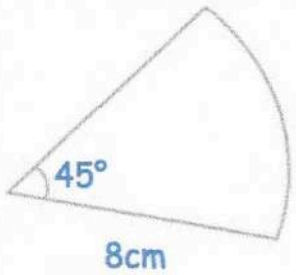
Corbettmaths

Solve $3x^2 = 192$

$x^2 = 49$

$x = 7$ or $-7$

Find the perimeter of the sector.




$\frac{45}{360} \times \pi \times 16 = 6.283...$

$6.283... + 8 + 8$

$22.28$ cm

Solve these simultaneous equations

$3x - 4y = 18$ $\times 2$

$2x - 5y = 19$ $\times 3$

$6x - 8y = 36$

$6x - 15y = 57$ subtract

$7y = -21$

$y = -3$

$2x - -15 = 19$

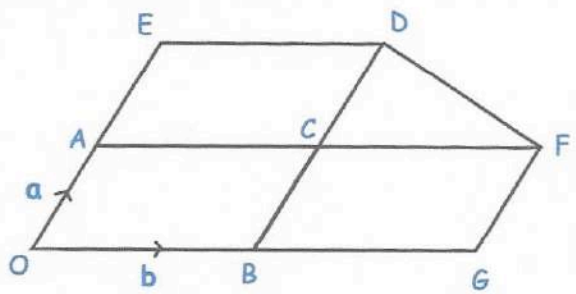
$2x + 15 = 19$

$2x = 4$

$x = 2$

$x = 2$

$y = -3$




B is the midpoint of OG.

A is the midpoint of OE.

$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$

Express in terms of a and b, the vector

$\overrightarrow{OC}$ $\underline{a} + \underline{b}$

Express in terms of a and b, the vector

$\overrightarrow{OE}$ $2\underline{a}$

**3rd February**

Corbettmaths

Work out

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

Give your answer as a mixed number.

$\frac{7}{5} + \frac{5}{2}$

$\frac{14}{10} + \frac{25}{10} = \frac{39}{10}$ $3\frac{9}{10}$

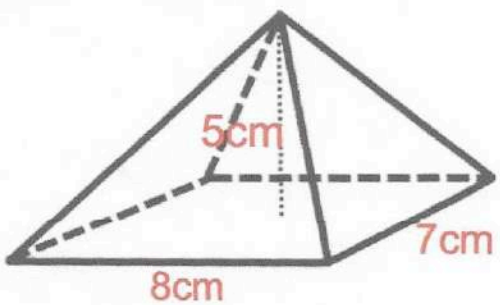
The angles in a triangle are in the ratio 1 : 2 : 9

$1+2+9 = 12$

What is the size of the largest angle?

$180 \div 12 = 15$

$15 \times 9 = 135^\circ$




Calculate the volume of the pyramid

$\frac{1}{3}(7 \times 8) \times 5$

$\frac{280}{3}$ or $93.33\ldots\ cm^3$

Expand and simplify

$(3y - 2)(y + 3)$

$3y^2 + 9y - 2y - 6$

$3y^2 + 7y - 6$

There are 20 students in class 1.
There are 10 students in class 2.

Both classes sit the same test.

The mean mark in class 1 is 64%.
The mean mark in class 2 is 80%

Work out the overall mean for both classes.

$20 \times 64 = 1280$
$10 \times 80 = 800$
$+$
$2080$

$2080 \div 30 = 69.33\%$

**9th February**

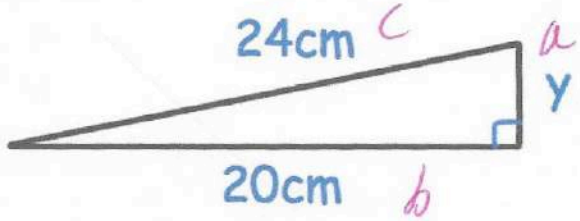
Corbettmaths

Mrs Jenkins buys a car for £3400.
She sells it for £3800.

Work out her percentage profit.

$\frac{400}{3400} \times 100$

11.76%




Find y. $a^2 + b^2 = c^2$

$y^2 + 20^2 = 24^2$

$y^2 + 400 = 576$

$y^2 = 176$

$y = 13.2665\text{cm}$

Use approximations to estimate the value of

$$\sqrt{\frac{50.77}{0.513}} \approx \sqrt{\frac{50}{0.5}} = \sqrt{100} = 10$$

| length, L, cm | Frequency | | fx |
|---|---|---|---|
| $0 < L \leq 10$ | 5 | x 21 | 105 |
| $10 < L \leq 20$ | 15 | x 11 | 165 |
| $20 < L \leq 30$ | 25 | x 31 | 775 |
| $30 < L \leq 40$ | 35 | x 12 | 420 |
| $40 < L \leq 50$ | 45 | x 25 | 1125 |
| | 100 | | 2590 |

Work out the estimated mean

$2590 \div 100 = 25.9$

Solve the simultaneous equations

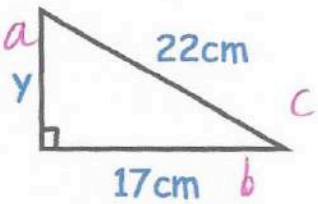
$4x + 5y = 25$

$x - y = 4 \quad \times 5$

$5x - 5y = 20$

**10th February**

Corbettmaths




$y^2 + 17^2 = 22^2$

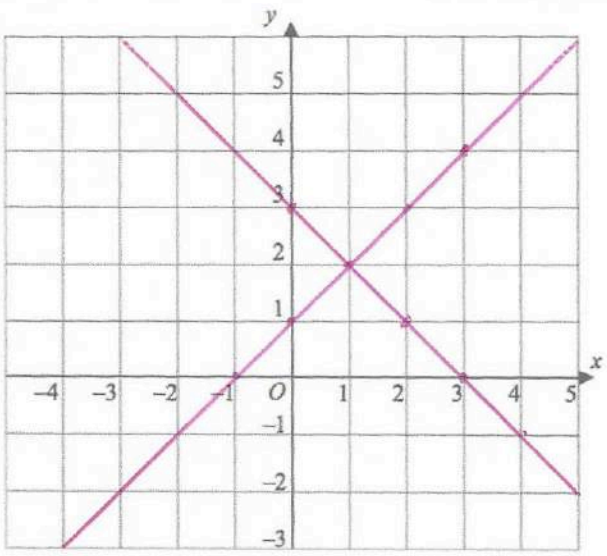
$y^2 + 289 = 484$

$y^2 = 195$

$y = 13.964$cm

13.964cm

Find y.




$y = x + 1$

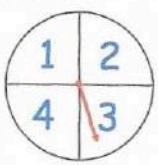
| x | 0 | 1 | 2 |
|---|---|---|---|
| y | 1 | 2 | 3 |

$x + y = 3$

| x | 0 | 1 | 2 |
|---|---|---|---|
| y | 3 | 2 | 1 |

Draw x + y = 3 and draw y = x + 1.
Write down the coordinates of where the two graphs intersect.

(1, 2)



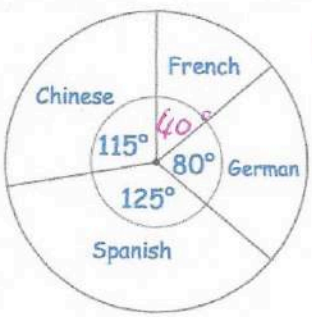

$P(1) = 0.4$

$P(3) = 0.2$

The probability of landing on a 2 is 0.25
The probability of landing on a 4 is 0.15
The probability of landing on a 1 is double the probability of a 3.

The spinner is spun 500 times.
Calculate the number of times you would expect it to land on 3

$0.2 \times 500 = 100$




$648 \times \frac{40}{360} = 72$ French

$648 \times \frac{115}{360} = 207$

The pie chart shows information about the languages studied in a school.
There are 648 students in the school.
Each student studies one language.
How many more students study Chinese than French?

$207 - 72$

$= 135$

**16th February**

Corbettmaths

Solve the inequality $3x - 11 > 16$

$3x > 27$

$x > 9$

A has coordinates (2, –7)
B has coordinates (6, 11)

Calculate the coordinates of M, the midpoint of AB.

(4, 2)

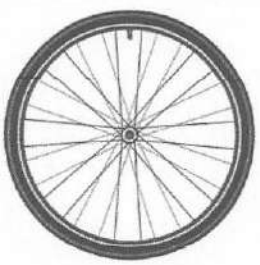
Write 5830000 in standard form.

$5.83 \times 10^6$

Write sixteen million in standard form.

16000000

$1.6 \times 10^7$



$C = \pi \times d$

$100 = \pi \times d$

$d = 31.83...$

$r = 15.91...$

This wheel has a circumference of 1 metre. What is the size of the radius?

15.9155cm

A drink is made from mixing orange juice and lemonade in the ratio 1:4

$1+4=5$

Lemonade costs £0.80 per litre.
Orange juice costs £1.50 per litre.

£1.88

Work out the cost of 2 litres of the drink.

$2000 \div 5 = 400ml$

400ml of OJ $0.4 \times £1.50 = £0.60$

1600ml of lemonade $1.6 \times £0.80 = £1.28$

**17th February**

Corbettmaths

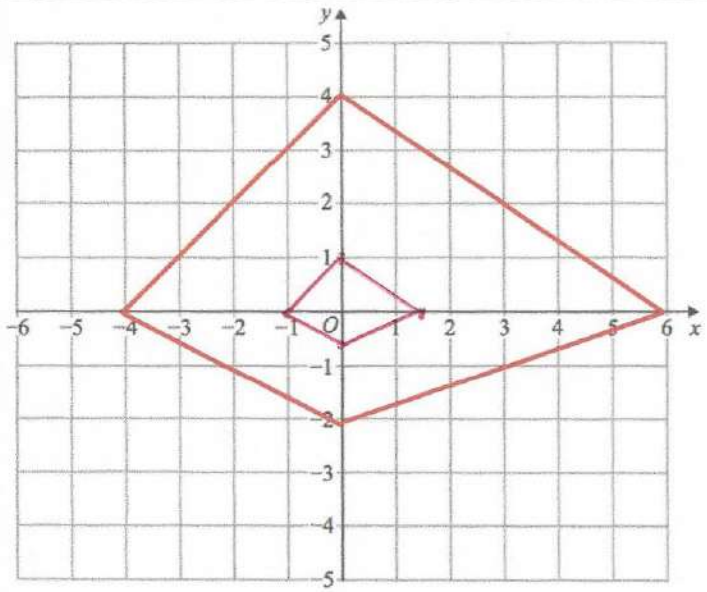
Mollie has £250 in her bank account to the nearest ten pounds.

What is the smallest amount she could have?

£245

What is the largest amount she could have?

£254.99




Enlarge the quadrilateral by scale factor ¼ with centre of enlargement (0,0)

In a sale, normal prices are reduced by 25%.

The sale price of a calculator is £8.82

75% = 8.82

1% = 0.1176

Calculate the normal price of the calculator.

£11.76

Solve these simultaneous equations

$6x + 2y = 14$ ×5

$3x - 5y = 10$ ×2

$30x + 10y = 70$

$6x - 10y = 20$

$36x = 90$

$x = 2.5$

$15 + 2y = 14$

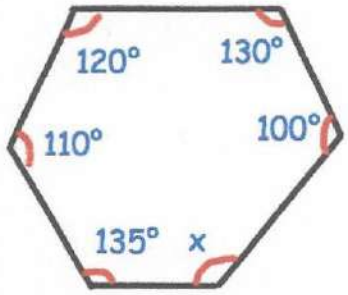
$2y = -1$

$y = -\frac{1}{2}$ or $-0.5$

$x = 2.5$ & $y = -0.5$

**23rd February**

Corbettmaths




720°

Find x

720 − 595 =

125°

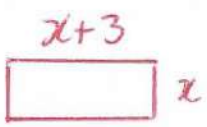
Solve the inequality $9x + 4 < 5x - 14$

$4x + 4 < -14$

$4x < -18$

$x < -4.5$

A rectangle has one side 3cm longer than the other. Write an expression for the area.




$x(x+3)$

$x^2 + 3x$

$\frac{99}{100}, \frac{97}{95}, \frac{95}{90}, \frac{93}{85}, \ldots$ ... −5n+105

100 95 90

−5 −10 −15

Find the nth term

99, 97, 95, 93 −2n+101

−2 −4 −6 −8

$-2n + 101$ / $-5n + 105$

or $101 - 2n$ / $105 - 5n$

The ratio of the sizes of angles in a quadrilateral is 1:2:2:4

1+2+2+4 = 9

360 ÷ 9 = 40°

Work out the size of each angle.

40°, 80°, 80°, 160°

**24th February**

Corbettmaths

Calculate the circumference of this circle.
Give your answer in terms of π


$C = \pi \times d$

$= \pi \times 14$

$= 14\pi$ cm

$$1 < \frac{6x - 3}{5} < 9$$

x is an integer.
Find the possible solutions.

$5 < 6x - 3 < 45$

$8 < 6x < 48$

$1.\dot{3} < x < 8$

2, 3, 4, 5, 6, 7

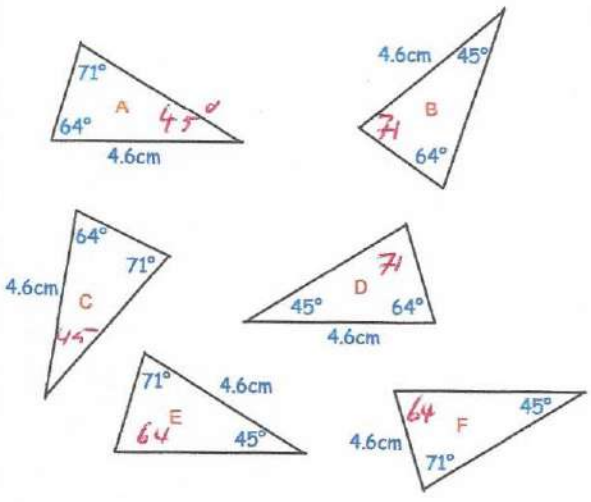
The price of a TV in the sales is reduced by 5% to £389.50.

What was the price of the TV before the sales?

95% = 389.50

1% = 4.1

100% = £410




Work out the third angle in triangle A

$71 + 64 = 135$

$180 - 135 = 45°$

Which two triangles are congruent to triangle A?

C and D

**2nd March**

Corbettmaths

Factorise

$y^2 - 25$

$(y-5)(y+5)$

Factorise

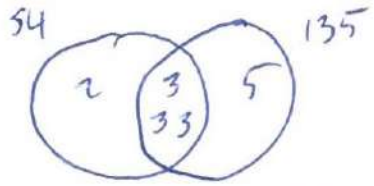
$y^2 + 2y - 24$

$(y+6)(y-4)$

Find the HCF of 54 and 135

$54 = 2 \times 3 \times 3 \times 3$

$135 = 3 \times 3 \times 3 \times 5$



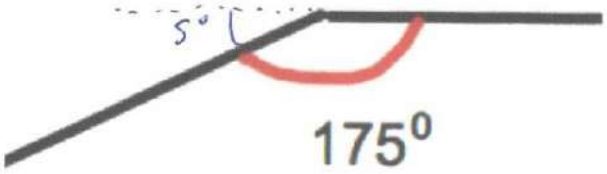

$3 \times 3 \times 3 = 27$

| Amount spent, m, (£) | | Frequency | fx |
|---|---|---|---|
| $0 < m \leq 5$ | 2.5 | 4 | 10 |
| $5 < m \leq 10$ | 7.5 | 12 | 90 |
| $10 < m \leq 15$ | 12.5 | 26 | 325 |
| $15 < m \leq 20$ | 17.5 | 8 | 140 |
| | | 50 | 565 |

Calculate an estimate of the mean

$565 \div 50 = 11.3$

Shown below is an interior angle from a regular polygon.




Calculate the number of sides the polygon has.

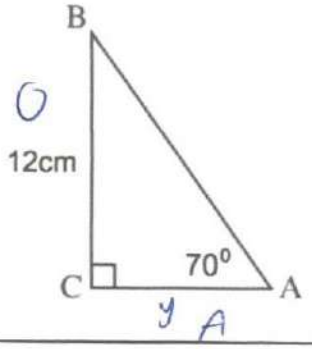
$360 \div 5 = 72$ sides

Find the length of AC

T O A

$AC = \frac{12}{\tan 70}$

$= 4.3676$ cm



**3rd March**

Corbettmaths

Solve the simultaneous equations

$2x + y = 7$
$3x - y = 8$ add

$5x = 15$
$x = 3$

$6 + y = 7$
$y = 1$

$x = 3$, $y = 1$

Factorise $x^2 - x - 12$

$(x - 4)(x + 3)$

Write $5.2 \times 10^{-4}$ as an ordinary number

0.00052

Find the nth term of

90 80 70 60 ... ...

$-10n + 100$
or $100 - 10n$

Find the 100th term.

$100 - 10 \times 100$
$100 - 1000$
$= -900$

Solve:

$3(4x - 9) = 2x + 30$

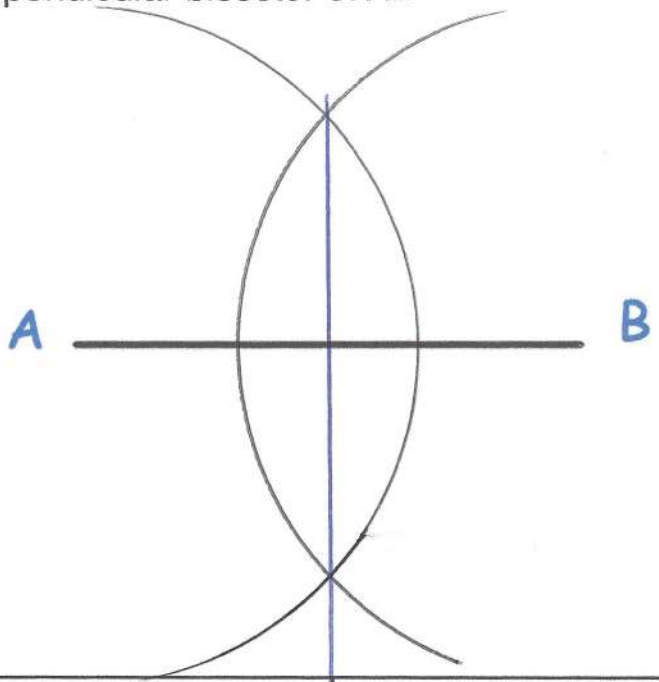
$12x - 27 = 2x + 30$
$10x - 27 = 30$
$10x = 57$

$x = 5.7$

**9th March**

Corbettmaths

Construct the perpendicular bisector of AB




Factorise $x^2 + 4x + 3$

$(x+3)(x+1)$

Factorise $x^2 - 3x + 2$

$(x-2)(x-1)$

Write in standard form

$0.0065 \times 10^6$

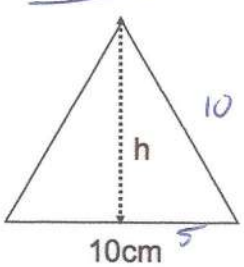
$6.5 \times 10^3$

Write in standard form

$146.25 \times 10^{-10}$

$1.4625 \times 10^{-8}$

Below is an equilateral triangle




$h^2 = 10^2 - 5^2$

$h^2 = 75$

$h = 5\sqrt{3}$

$= 8.66\text{cm}$

Calculate the area of the triangle.

$\frac{1}{2} \times 10 \times 8.66$

$43.3\text{cm}^2$

**10th March**

Corbettmaths

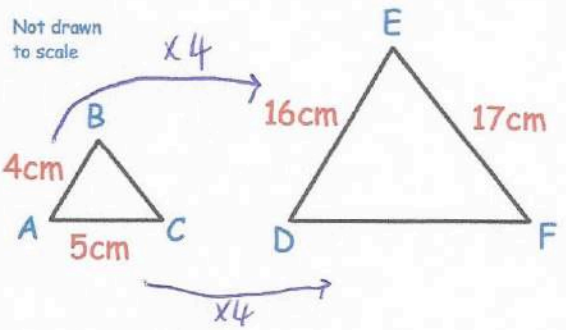
In 2012 the number of golfers in a club is 450.

In 2014 the number of golfers was 520.

Work out the percentage increase.

$\frac{70}{450} \times 100$

$= 15.5\%$




Triangles ABC and DEF are similar.
AB = 4cm AC = 5cm
DE = 16cm EF = 17cm.

Work out the length of DF.

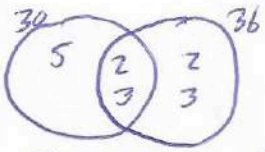
20 cm

Michael organises his books into groups of 36. He then organises them into groups of 30.

What is the smallest possible number of books that Michael has.

$30 = 2 \times 3 \times 5$
$36 = 2 \times 2 \times 3 \times 3$

LCM of 36 & 30 = 180




$5 \times 2 \times 2 \times 3 \times 3 = 180$

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

$\frac{15}{2} + \frac{13}{5}$

$\frac{75}{10} + \frac{26}{10} = \frac{101}{10}$

$10\frac{1}{10}$


Calculate the volume of the sphere.
Give your answer to 1 decimal place.

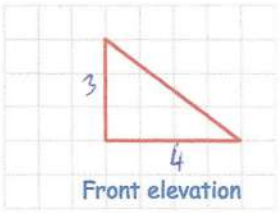
$V = \frac{4}{3}\pi r^3$

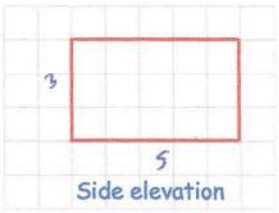
$= \frac{4}{3} \times \pi \times 12^3$

$= 7238.2\ cm^3$

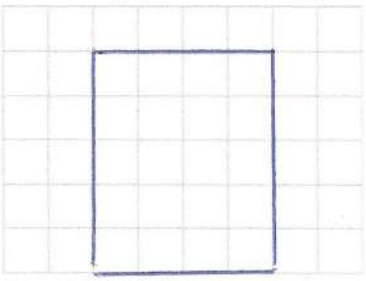
**16th March**

Corbettmaths

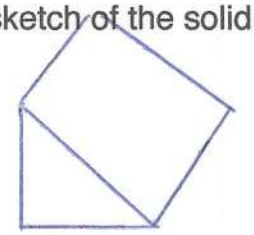



On the grid, draw the plan view.



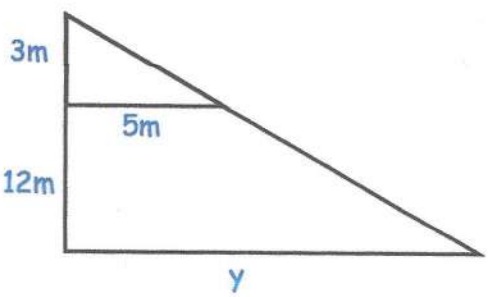
Draw a sketch of the solid shape.



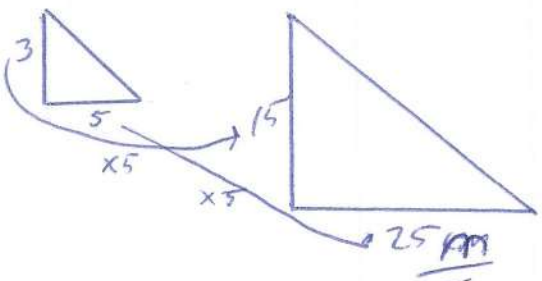
Factorise

$x^2 - 10x + 25$

$(x-5)(x-5)$




Find y




Solve the simultaneous equations

$2x + 4y = 24$ ×5

$6x - 5y = 21$ ×4

$24x - 20y = 84$

$10x + 20y = 120$

Add

$34x = 204$

$x = 6$

$36 - 5y = 21$

$5y = 15$

$y = 3$

$x = 6$

$y = 3$

**17th March**

Corbettmaths

Three angles in a pentagon are 110 degrees each. $3 \times 110 = 330$

With the two other angles, one is 10 degrees larger than the other.

$x$ $x+10$

Find the size of each angle.

$2x + 10 + 330 = 540$

$2x + 340 = 540$

$2x = 200$

$x = 100$

$100^\circ$ & $110^\circ$

Make c the subject

$$w = \frac{4 + c}{8}$$

$8w = 4 + c$

$8w - 4 = c$

$C = 8w - 4$

Work out

$$2\frac{3}{4} + 3\frac{2}{3}$$

$\frac{11}{4} + \frac{11}{3}$

$\frac{33}{12} + \frac{44}{12} = \frac{77}{12}$

$6\frac{5}{12}$

Solve $x^2 + x - 12 = 0$

$(x+4)(x-3) = 0$

$x = -4$ or $x = 3$

$$\underline{a} = \begin{pmatrix} -4 \\ -1 \end{pmatrix} \quad \underline{b} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$$

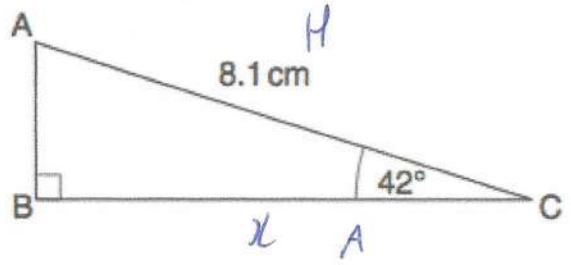
$4\underline{a} = \begin{pmatrix} -16 \\ -4 \end{pmatrix}$

Work out the vector $4\mathbf{a} + \mathbf{b}$

$4\underline{a} + \underline{b} = \begin{pmatrix} -11 \\ -1 \end{pmatrix}$

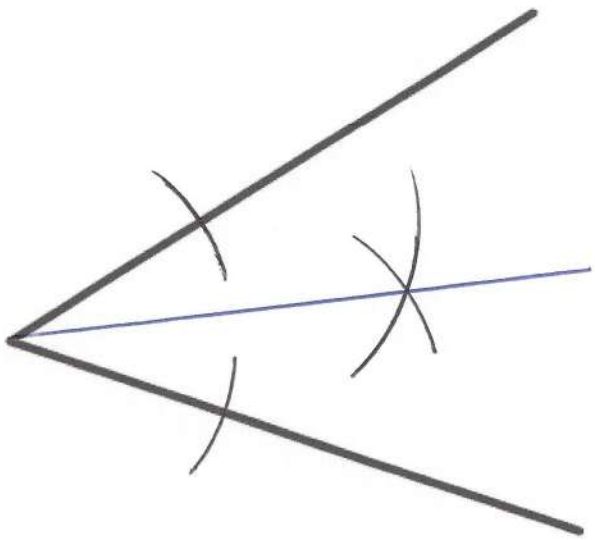
**23rd March**

Corbettmaths

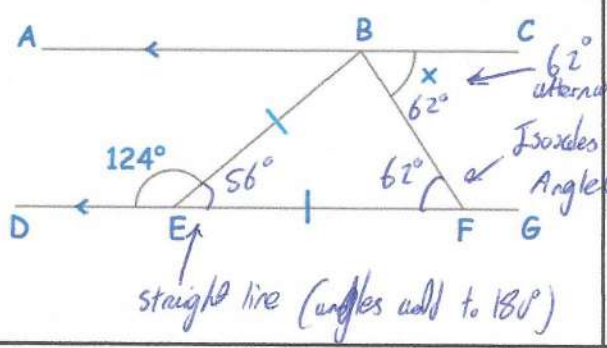



H
C A H
$\cos(42) \times 8.1$
6.019 cm

Find BC.



Construct the angle bisector.




62° alternate angles are equal.
Isosceles triangle
Angle EBF = EFB
straight line (angles add to 180°)

FInd the size of the angle x.
Give reasons for your answer.

62°

Solve the simultaneous equations

3x + 2y = 1
2x + 3y = 9

$\times 3$ $9x + 6y = 3$
$\times 2$ $4x + 6y = 18$

$5x = -15$
$x = -3$

$-9 + 2y = 1$
$2y = 10$
$y = 5$

$x = -3$ & $y = 5$

**24th March**

Corbettmaths

Solve the inequality

$5x \leq x + 9$

$5x \leq x + 9$
$-x \quad -x$
$4x \leq 9$
$x \leq 2.25$

x is a whole number.

Write down the largest value of x that satisfies the inequality.

2

Write $4.3 \times 10^{-7}$ as an ordinary number.

0.00000043

Write 940000 in standard form.

$9.4 \times 10^5$

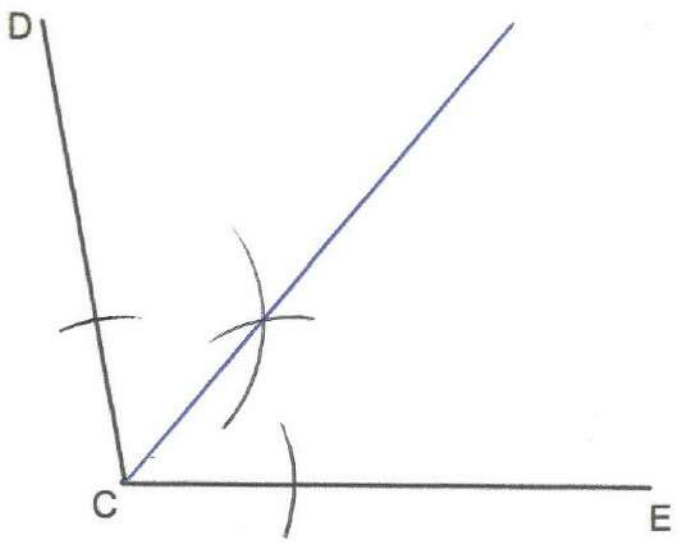
Make w the subject of the formula

$6a = 3w + 4a + 7$

$2a = 3w + 7$
$2a - 7 = 3w$

$w = \frac{2a-7}{3}$

Draw the locus of all points which are equidistant from lines CD and CE.



Name: _____ 5-a-day Foundation Plus

**30th March**

Corbettmaths

Expand $4y^2(5y^2 - 2a)$

$20y^4 - 8ay^2$

Solve $x^2 + 3x - 4 = 0$

$(x + 4)(x - 1) = 0$

$x = -4$ or $x = 1$

| Height ($h$ metres) | Frequency | $fx$ |
|---|---|---|
| $1.50 \leqslant h < 1.55$ | 6 | 9.15 |
| $1.55 \leqslant h < 1.60$ | 10 | 15.75 |
| $1.60 \leqslant h < 1.65$ | 24 | 39 |
| $1.65 \leqslant h < 1.75$ | 17 | 28.9 |
| $1.75 \leqslant h < 1.85$ | + 3 | + 5.4 |
| | | * |

Calculate an estimate of the mean height.

* = 98.2

98.2 ÷ 60 = 1.636

Solve the simultaneous equations

$y + 1 = 2x$

$y = x + 2$

$x + 2 + 1 = 2x$

$x + 3 = 2x$

$3 = x$

$y = 3 + 2$

$y = 5$

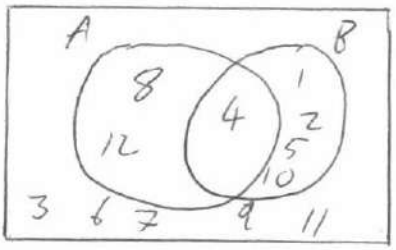
$x = 3$ and $y = 5$

$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

A = {multiples of 4} 4 8 12

B = {factors of 20} 1 2 4 5 10

Draw a Venn diagram for this information.



**31st March**

Corbettmaths

c = 0.94 when truncated to two decimal places.

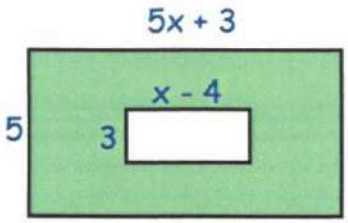
Write an inequality to show the interval in which the actual value of c lies.

$0.94 \leq c < 0.95$

$1\frac{4}{7} \times 2\frac{3}{4}$

$\frac{11}{7} \times \frac{11}{4} = \frac{121}{28}$

$4\frac{9}{28}$




Work out the area of the green shape.

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

$25x + 15 - 3x + 12$

$22x + 27$

Expand and simplify

x(8x + 3) - 2x(x - 5)

$8x^2 + 3x - 2x^2 + 10x$

$6x^2 + 13x$

A regular polygon has exterior angle 15°.

How many sides does it have?

$360 \div 15$

24 sides

**6th April**

Corbettmaths

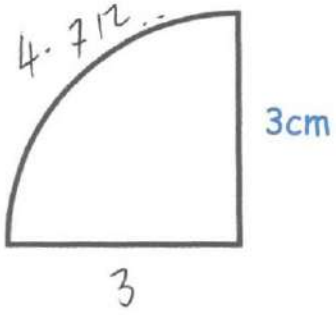
Find the perimeter

$\pi \times 6 = 18.84...$

$18.84... \div 4 = 4.712...$

$4.712 + 3 + 3$

$10.71\text{cm}$




A biased dice is rolled 500 times.

The probability of a 5 is 0.35.

How many 5's are expected?

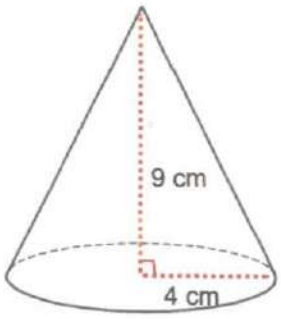
$500 \times 0.35 = 175$

Simplify

$$\frac{4^5 \times 4^6}{4^3}$$

$\frac{4^{11}}{4^3}$

$4^8$




Calculate the volume of the cone

$\frac{1}{3} \times \pi \times 4^2 \times 9$

$= 150.8\text{ cm}^3$

3.6 has been rounded to one decimal place.

Write down an inequality to show the range of possible actual values.

$3.55 \leq n < 3.65$

**7th April**

Corbettmaths

Expand and simplify

$(w + 4)(w + 9)$

$w^2 + 9w + 4w + 36$

$w^2 + 13w + 36$

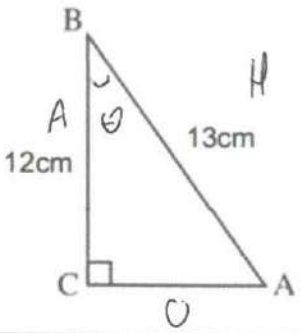
---

$c = 250$ when rounded to the nearest ten.

Write an inequality to show the interval in which the actual value for c lies.

$245 \leq c < 255$

---




Find the size of angle ABC.

$\cos\theta = \frac{12}{13}$

$\theta = 22.62°$

---

Matthew is training for a race.
He runs 3 days in one week.

Matthew runs 1½ miles on Monday.
Then he runs 1⅔ miles on Thursday.
Finally he runs 2⅕ miles on Sunday.

Work out how far Matthew ran in total.

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

$\frac{3}{2} + \frac{5}{3} + \frac{11}{5} = \frac{45}{30} + \frac{50}{30} + \frac{66}{30}$

$\frac{161}{30} = 5\frac{11}{30}$

---

$a = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ $b = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$

$3a = \begin{pmatrix} 9 \\ -3 \end{pmatrix}$ $3b = \begin{pmatrix} 3 \\ -6 \end{pmatrix}$

Work out 3a + 3b

$\begin{pmatrix} 12 \\ -9 \end{pmatrix}$

**13th April**

Corbettmaths

Factorise

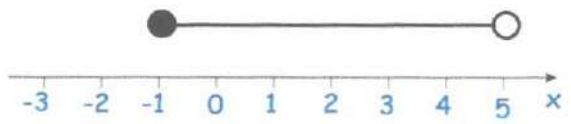
$x^2 + 3x - 10$

$(x + 5)(x - 2)$

Factorise

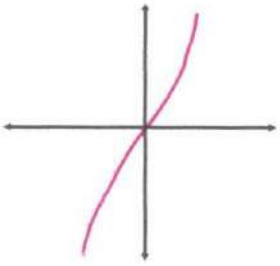
$x^2 - 3x - 4$

$(x + 1)(x - 4)$

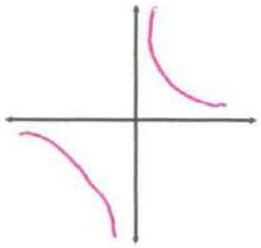



Write the inequality shown

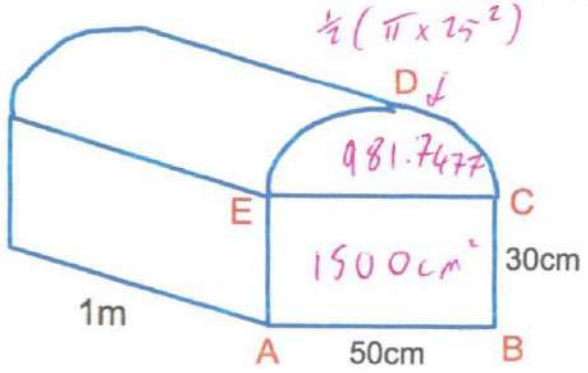
$-1 \leq x < 5$



Sketch $y = x^3$



Sketch $y = \frac{1}{x}$ where $x \neq 0$




Shown above is a prism that is 1m long.

ABCDE is the cross-section of the prism.
ABCE is a rectangle and CDE is a semi-circle.

Calculate the volume of the prism.
Give your answer correct to 1 decimal place.

$2481.74... \times 100$

$248174.8\ cm^3$

**14th April**

Corbettmaths

Solve the simultaneous equations

$3x + y = 19$ $\times 3$
$2x + 3y = 8$

$9x + 3y = 57$
$2x + 3y = 8$

$7x = 49$
$x = 7$

$14 + 3y = 8$
$3y = -6$
$y = -2$

Solve

$3 < 2x + 1 < 19$

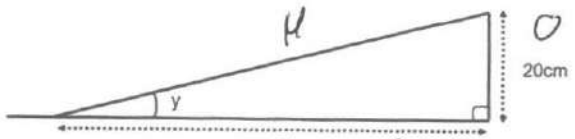
$2 < 2x < 18$

$1 < x < 9$

What is the mass of an object which has a volume of $120cm^3$ and a density of $6g/cm^3$ ?

$m = d \times V$
$= 6 \times 120 = 720g$

A ramp is 2.1m long and 20cm high.




$210cm$

Calculate the size of angle y.

$\tan y = \frac{20}{210}$

$y = 5.44°$

Solve the simultaneous equations

$5x + 7y = 52$ $\times 3$
$2x - 3y = 15$ $\times 7$

$15x + 21y = 156$
$14x - 21y = 105$
$29x = 261$
$x = 9$
$18 - 3y = 15$ $y = 1$

**20th April**

Corbettmaths

Annie, Beth and Carly go shopping.
Annie spend m pounds. $m$
Beth spend twice as much as Annie. $2m$
Carly spend 5 pounds more than Annie. $m+5$

The total amount of money spent, in pounds, is more than £60.

Write down, in terms of m, an inequality to show this information.

$4m + 5 > 60$

Work out $(4.5 \times 10^7) \div (5 \times 10^{-2})$
Give your answer in standard form.

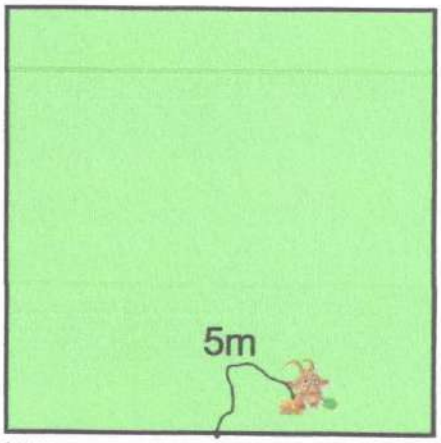
$0.9 \times 10^9$

$9 \times 10^8$

The distance from Junction 19 to Junction 20 on a motorway is 14 miles.
Bethany drove the distance in 15 minutes.
Max drove the distance at a speed of 52mph.
Who was faster?

Bethany
14 miles in 15 mins
28 miles in 30 mins
56 miles in 1 hour
56 mph

Bethany was driving faster.




A goat is in a square field which has length 12m.
The goat is tied to the middle of a 12m fence on one side with a 5m rope.

Field: $12 \times 12 = 144\ m^2$

Goat: $\frac{1}{2} \times \pi \times 5^2 = 39.27\ m^2$

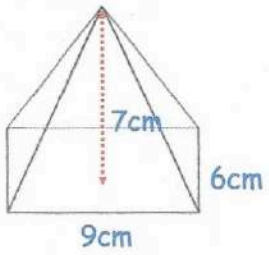
Work out the percentage of the field the goat can reach.

$\frac{39.27}{144} \times 100$

27.27%

**21st April**

Corbettmaths




$A = 9 \times 6 = 54$

Find the volume

$V = \frac{1}{3} Ah$

$= \frac{1}{3} \times 54 \times 7$

$= 126 \text{ cm}^3$

The time, T, taken to serve the guests at a wedding is inversely proportional to the number of waiters, w.

$T = \frac{300}{15} = 20$ mins

The time is calculated by

$$T = \frac{300}{w}$$

Work out how long it would serve the guests if there were 15 waiters.

Calculate how long it would take to serve the guests if there were 6 waiters.

$\frac{300}{6} = 50$ mins

Work out the difference in the time taken to serve the guests if there were 6 waiters or if there were 20 waiters.

6 waiters: 50 mins

20 waiters: 15 mins

$50 - 15 = 35$ mins

Sally bought a piano for £2200.
In each year the value of the piano increases by 11% of its value at the start of that year.

$2200 \times 1.11 = 2442$

$2200 \times 1.11^3 = 3008.70$

$2200 \times 1.11^4 = 3339.7$

Calculate after how many complete years the value of the piano will be at least £3200.

4 years

Solve these simultaneous equations

$8x + 7y = 39$

$8x + 2y = 34$ sub

$5y = 5$ $y = 1$

$8x + 2 = 34$

$8x = 32$

$x = 4$

$y = 1$ & $x = 4$

**27th April**

Corbettmaths

The equation

$$2x^2 + 3x = 50$$

has a solution between 4 and 5.
Find this solution to 1 decimal place.

| $x$ | $2x^2+3x$ | Comment |
|---|---|---|
| 4.5 | 54 | too high |
| 4.4 | 51.92 | too high |
| 4.3 | 49.88 | too low |
| 4.35 | 50.895 | too high |

4.3 — 4.35 — 4.4

↓ ↑ ↑

4.3

Write 237.5% as a fraction.
Give your answer in its simplest form.

$\frac{2375}{1000} = \frac{19}{8}$

Every weekday, Raymond runs 2½ miles.
On a Saturday and a Sunday, he runs 4⅔ miles.

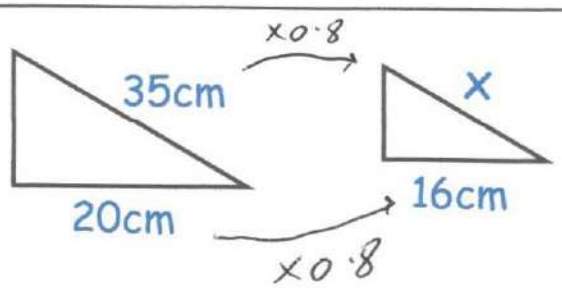
How far does Raymond run over the course of 1 week?

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

$\frac{5}{2} \times \frac{5}{1} = \frac{25}{2}$ $\quad$ $\frac{14}{3} \times \frac{2}{1} = \frac{28}{3}$

$\frac{25}{2} + \frac{28}{3}$

$\frac{75}{6} + \frac{56}{6} = \frac{131}{6}$ $\quad$ $21\frac{5}{6}$




The two triangles are mathematically similar.
Find x

28cm

Calculate the density of a piece of wood with a mass of 21g and a volume of 35cm³

$d = \frac{m}{v} = \frac{21}{35} = 0.6 g/cm^3$

**28th April**

Corbettmaths

Factorise

$x^2 + 2x - 8$

$(x+4)(x-2)$

Factorise

$y^2 - 144$

$(y-12)(y+12)$

Find the least common multiple (LCM) of 36 and 54.

$36 = 2 \times 2 \times 3 \times 3$

$54 = 2 \times 3 \times 3 \times 3$

36 54

2 3 3 3 2

LCM $= 2 \times 3 \times 3 \times 2 \times 3$

$= 108$

Solve the simultaneous equations

$5x - y = 17$ $\times 3$

$2x + 3y = 0$

$15x - 3y = 51$

$2x + 3y = 0$

$17x = 51$

$x = 3$

$15 - y = 17$

$y = -2$

$x = 3$

$y = -2$

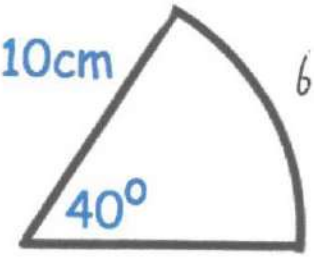
The Great Pyramid of Giza is a square based pyramid.
The base has a side length of 440 cubits. $A = 440 \times 440 = 193600$
The height of the pyramid is 280 cubits.

Calculate the volume of the Great Pyramid of Giza.

$V = \frac{1}{3}Ah$

$V = \frac{1}{3} \times 193600 \times 280$

$V = 18069333.33$ cubits$^3$.




6.9813...

Calculate the perimeter.

$\frac{40}{360} \times \pi \times 20$

$\frac{1}{9} \times \pi \times 20 = 6.9813...$

$10 + 10 + 6.9813... = 26.98$cm