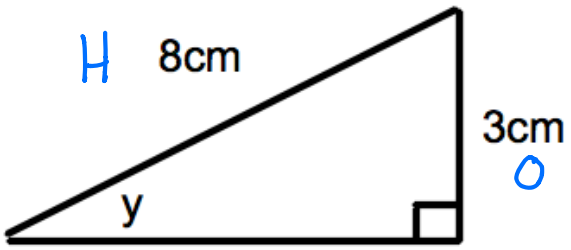
Name: _____ 5-a-day Foundation Plus

1st August

Corbettmaths

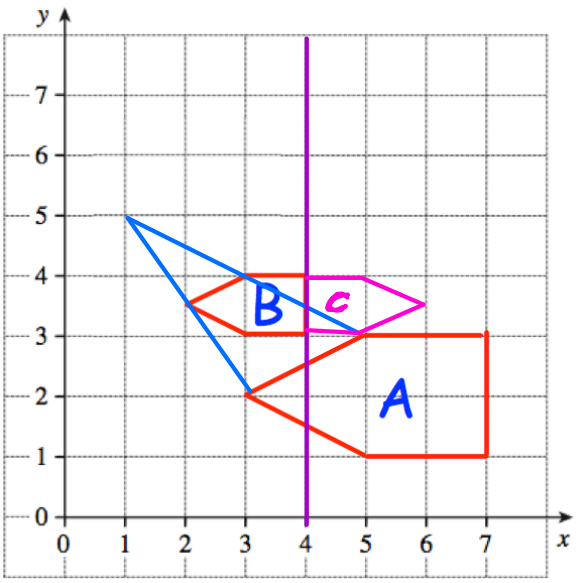


Calculate angle y

$\sin = \frac{O}{H}$

$\sin y = \frac{3}{8}$

$y = \sin^{-1}\left(\frac{3}{8}\right) = 22.02^{\circ}$



Identify centre of enlargement.

Describe fully the single transformation that maps shape A onto shape B.

Enlargement
scale factor $\frac{1}{2}$
about (1, 5)

Reflect shape B using x = 4 as the mirror line

See shape C

There are three colours of beads in a bag.
The ratio of red to yellow beads is 8:3
The ratio of green to yellow beads is 9:2.

What fraction of the beads are green?

R : Y : G
8 : 3
2 : 9
16 : 6
6 : 27

$\frac{27}{49}$

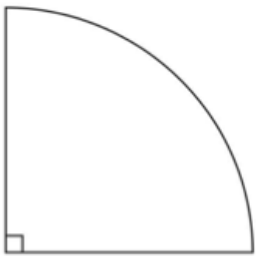
Work out the reciprocal of 20.
Give your answer as a decimal

$\frac{1}{20} = 0.05$

Name: _____ 5-a-day Foundation Plus

2nd August

Corbettmaths



$\frac{\pi r^2}{4}$

Calculate the area of this quarter circle

$\frac{\pi \times 5^2}{4}$

$= 19.6 \text{ cm}^2$

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

Explain why.

The more waiters the less guests they each have to serve so the less time it takes

The time is calculated by

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

Work out how long it would serve the guests if there were 45 waiters.

$T = \frac{300}{45} = \frac{100}{15}$

$= 6\frac{2}{3}$ minutes

The density of Nitrogen is

1.25×10^{-6} kg/cm³

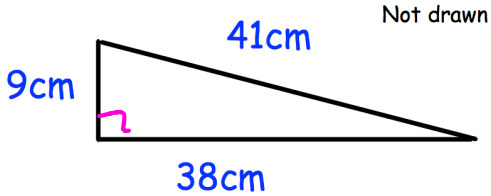
Calculate the mass of one cubic metre of Nitrogen.

$1 \text{ m}^3 = 1,000,000 \text{ cm}^3$

Mass = Density x Volume

$1.25 \times 10^{-6} \times 10^{6}$

$= 1.25$ kg



Does Pythagoras apply

Is this triangle a right angled triangle?

$9^2 + 38^2 = 1525$

$41^2 = 1681$

$1525 \neq 1681$

so not right-angled

3rd August

Corbettmaths

Solve (x + 3)(x + 5) = 0

Either $x + 3 = 0$

or $x + 5 = 0$

$x = -3$

$x = -5$

Mrs Reed buys a car costing £11760
This cost includes VAT at a rate of 20%.

How much is the car without VAT?

£11760 ÷ 1.20

= £9800

150 students visit a school canteen.

Some students have packed lunches.
Some students have a cooked lunch.

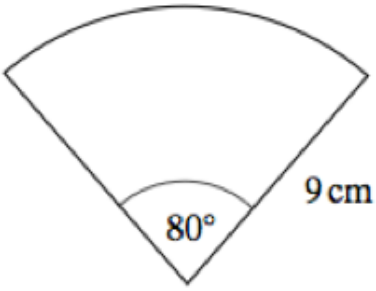
56 out of the 89 students who have packed lunch are female.
There are 72 boys.

Work out how many females have a cooked lunch.

Two Way Table

	Packed	Cooked	
Boys			72
Girls	56	22	78
	89		150

22



Calculate the area of the sector

$\pi r^2 \times \frac{80}{360}$

$\pi \times 9^2 \times \frac{80}{360}$

$= 56.5 \text{ cm}^2$

Name: _____ 5-a-day Foundation Plus

4th August

Corbettmaths

Solve

$$\frac{7x-3}{2} = 2x+9$$

$7x - 3 = 2(2x+9)$

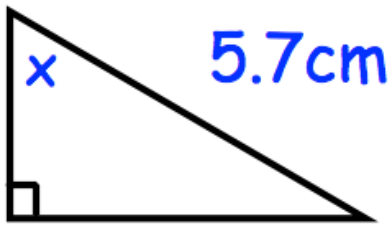
$7x - 3 = 4x + 18$

$7x - 4x = 18 + 3$

$3x = 21$

$x = \frac{21}{3}$

$x = 7$



Find x.

$\sin = \frac{O}{H}$

$\sin x = \frac{4.5}{5.7}$

$x = \sin^{-1}\left(\frac{4.5}{5.7}\right) = 52.1^{\circ}$

Solve the simultaneous equations

$2x - 5y = 1$ (1)

$8x + 3y = 27$ (2)

(1) x 4 $8x - 20y = 4$ (3)

(2) - (3) $23y = 23$ $y = 1$

Sub for y in (2)

$8x + 3(1) = 27$

$8x = 27 - 3$

$8x = 24$

$x = \frac{24}{8} = 3$

$x = 3$, $y = 1$

Find the volume of a piece of wood that has a mass of 600g and density of 0.75g/cm³

$V = \frac{M}{D}$

$\frac{600}{0.75}$

$= 800\ cm^3$

0.84 has been rounded to two decimal places.

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

$0.835 \leq x < 0.845$

Name: _____ 5-a-day Foundation Plus

5th August

Corbettmaths

Write in standard form

120×10^8

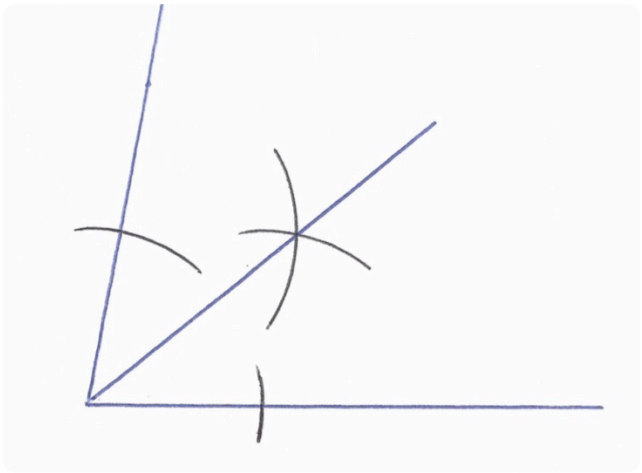
$= 1.2 \times 10^{10}$

Write in standard form

0.0000000000034

$= 3.4 \times 10^{-12}$

In the space below, draw a 80° angle.
Construct the angle bisector.



The circumference of a circle is 60cm.
Work out the area of the circle.

$2\pi r = 60$

$r = \frac{60}{2\pi} = \frac{30}{\pi}$

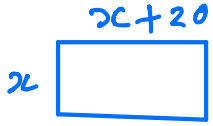
$\text{Area} = \pi r^2$

$= \pi \times \left(\frac{30}{\pi}\right)^2$

$= 286\ cm^2$

A rectangular field is 20 metres longer than wide.

The perimeter of the field is 280m.



$x+20+x$

$+x+20+x = 280$

Find the area of the field.

$4x + 40 = 280$

$4x = 280 - 40$

$4x = 240$

$x = \frac{240}{4} = 60$

$\text{Area} = 80 \times 60 = 4800\ m^2$

Name: _____ 5-a-day Foundation Plus

6th August

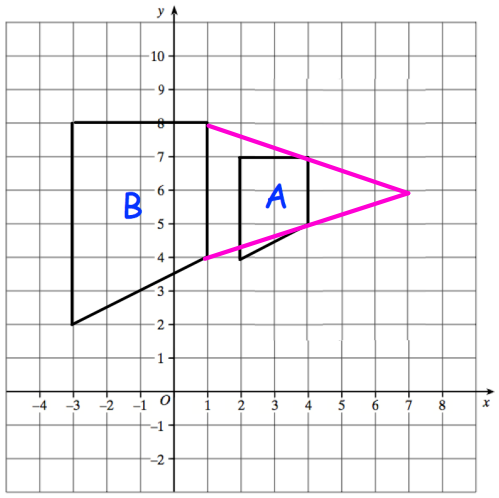
Corbettmaths

Solve $x^2 + x - 6 = 0$

$(x+3)(x-2) = 0$

$x + 3 = 0 \Rightarrow x = -3$

or $x - 2 = 0 \Rightarrow x = 2$

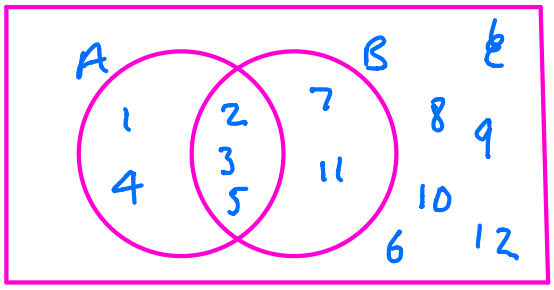


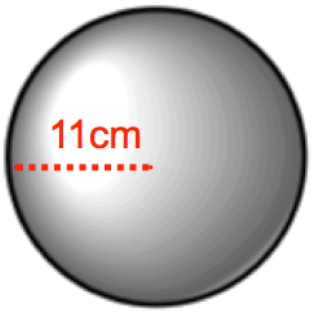
Describe fully the single transformation that maps shape B onto shape A.

Enlargement scale factor $\frac{1}{2}$ about (7, 6)

$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$
A = {numbers less than 6}
B = {prime numbers}

Draw a Venn diagram for this information.





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

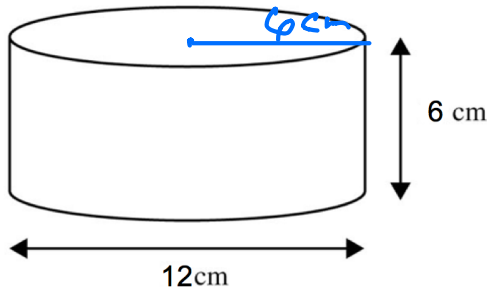
$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3}\pi \times 11^3$

$= 5575.3 \text{ cm}^3$

7th August

Corbettmaths



Calculate the volume.
Give your answer in terms of π

$V = \pi r^2 h$

$V = \pi \times 6^2 \times 6$

$= 216\pi \text{ cm}^3$

A light flashes every 50 seconds.
A buzzer buzzes every 3 minutes.

They both operate, how long until they both operate again?

50, 100, 150, 200, 250, 300
350, 400, ... 900

180, 360, 540, 720, 900

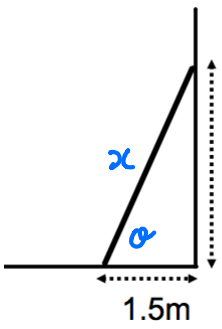
900s = 15 min

Calculate the density of a piece of wood with a mass of 80g and a volume of 90cm³

$D = \frac{M}{V}$

$\text{Density} = \frac{80}{90} \text{ g/cm}^3$

$= 0.889 \text{ g/cm}^3$



$\tan\theta = \frac{5.8}{1.5}$

$\theta = \tan^{-1}\left(\frac{5.8}{1.5}\right)$

$\theta = 75.5^\circ$

A ladder is placed against a wall.
To be safe, it must be inclined at between 70° and 80° to the ground.

Is the ladder safe?

So yes it is safe

Calculate the length of the ladder.

Pythagoras

$x^2 = 1.5^2 + 5.8^2$

$x^2 = 35.89$

$x = \sqrt{35.89}$

$x = 5.99 \text{ m}$

Name: _____ 5-a-day Foundation Plus

8th August

Corbettmaths

Expand and simplify $6(w + 3) - 2(w - 5)$

$6w + 18 - 2w - 10$

$= 4w + 8$

Can you spot any mistakes?

$6w + 18 - 2w + 10$

$= 4w + 28$

Four chairs and two tables cost £218.
Six chairs and seven tables cost £587.

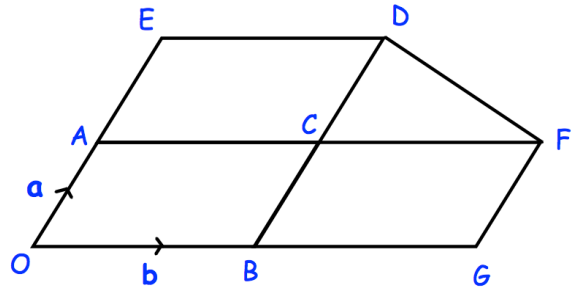
$4C + 2T = 218$ (1)
$6C + 7T = 587$ (2)
$12C + 6T = 654$ (3) (1) × 3
$12C + 14T = 1174$ (4) (2) × 2

Find the cost of buyings twenty chairs and five tables.

(4) − (3) $8T = 520$
$T = \frac{520}{8} = 65$

Sub in (1) $4C + 130 = 218$
$4C = 88 \Rightarrow C = 22$

$20C + 5T = 20 \times 22 + 5 \times 65 = £765$



Express in terms of **a** and **b** the vector $\overrightarrow{OC}$

$\overrightarrow{OC} = \overrightarrow{OA} + \overrightarrow{AC}$

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

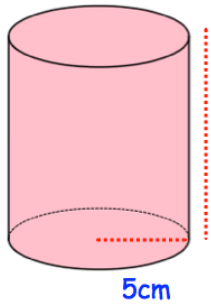
A cube with side length 8cm is placed on the ground. The pressure exerted on the ground is 4N/cm².

What force does the cube exert on the ground?

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

$4 = \frac{F}{8 \times 8} = \frac{F}{64}$

$F = 4 \times 64 = 256$ N



$2\pi rh + 2\pi r^2$

= curved surface + both ends

Calculate the surface area

$2\pi \times 5 \times 12 + 2\pi \times 5^2$

$= 534\ cm^2$

9th August

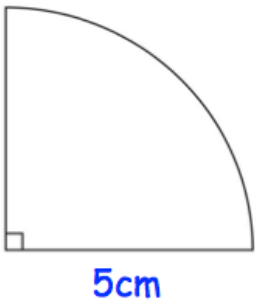
Corbettmaths

Calculate the perimeter of this quarter circle

$\frac{2\pi r}{4} + r + r$

$= \frac{2\pi \times 5}{4} + 5 + 5$

$= 17.85\text{cm}$



The mean of four numbers is 10.
Three of the numbers are 9, 11 and 7.
Work out the fourth number.

Mean = 10

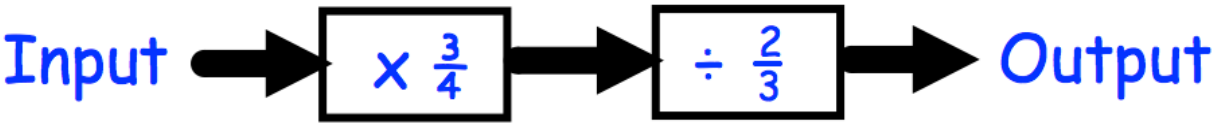
so total = 10×4

$= 40$

$9 + 11 + 7 = 27$

$40 - 27 = 13$

fourth is 13



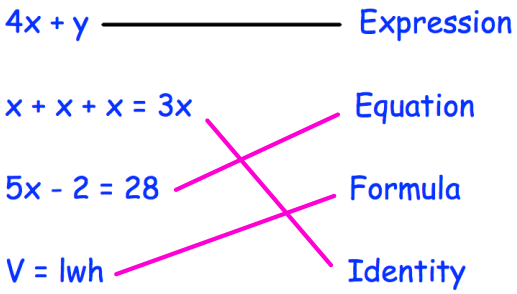
Find the output if the input is 5

$5 \times \frac{3}{4} \times \frac{3}{2} = \frac{45}{8}$ or $5\frac{5}{8}$

Factorise $x^2 + 10x + 9$

$(x+1)(x+9)$

Match each of the following



Name: _____ 5-a-day Foundation Plus

10th August

Corbettmaths

The table shows the probabilities that a sweet taken from a jar will be red, pink or purple.

Colour	Red	Pink	Purple
Probability	0.4	0.25	

$1-(0.4+0.25)=0.35$

There are 4000 sweets
How many are purple?

4000×0.35

$= 1400$

Simplify

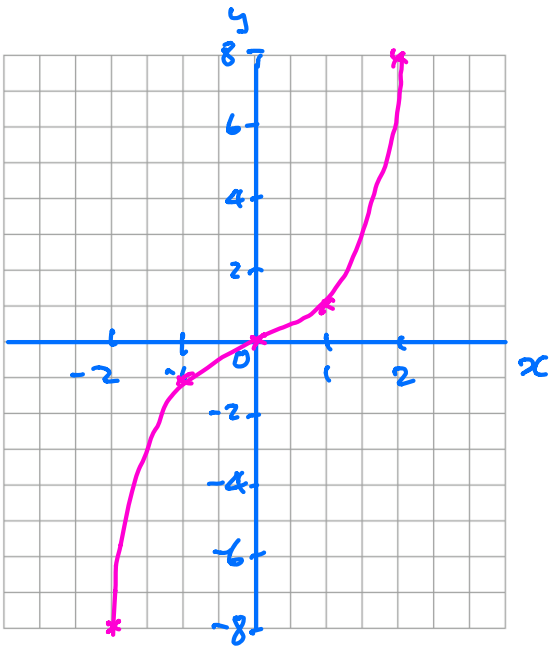
$2a^3c^3 \times 3a^2c$

$= 6a^5c^4$

$y = x^3$

Complete the table of values and draw a graph

x	-2	-1	0	1	2
y	-8	-1	0	1	8



Solve

$2x - 3y = 7$ (1)

$3x + 5y = 1$ (2)

(1) $\times 5$ $10x - 15y = 35$ (3)

(2) $\times 3$ $9x + 15y = 3$ (4)

(3) + (4) $19x = 38$

$x = \frac{38}{19} = 2$

sub in (2) $18 + 15y = 3$

$15y = -15$

$y = -1$

$\begin{cases} x = 2 \\ y = -1 \end{cases}$