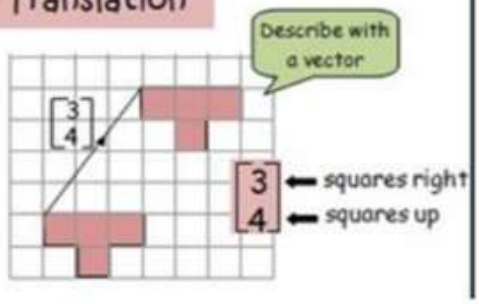
GCSE EXAM COUNTDOWN 1

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

FACTS TO LEARN

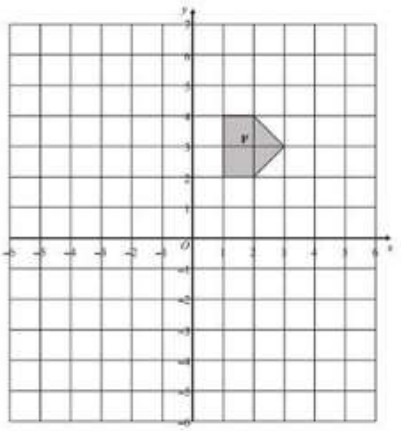
Translation



A translation describes a movement of the shape.

Move at least 3 corners before you draw the new shape.

1. On the grid translate the shaded shape P by 2 units to the right and 3 units up. Label the new shape R.



2. Give the vector which describes this translation.

Answers: 1. New shape at (3, 5) (3, 7) (4, 5) (4, 7) (5, 6) 2. $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$

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60 Daily Tweets for GCSE Maths

Day 22 Statistics & Probability

Have a go at answering these questions! Use a calculator for Q2

Question 1 – Foundation & Higher Tier GCSE

Lukas decides to investigate whether there is a link between the heights and widths of the trees in the forest near his home.

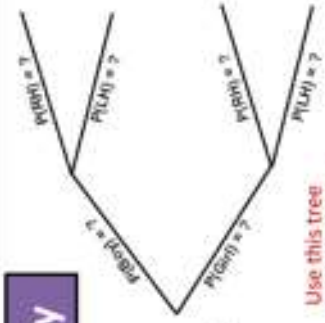
(a) Will the data he collects be:
(i) Primary or secondary?
(ii) Discrete or continuous?

(b) Use the data handling cycle to fully describe the steps he should take to complete his investigation.

Question 2 – Higher Tier GCSE only

In a class of 20 pupils, there are 12 boys.
Three quarters of these boys are right handed but half of the girls are left handed.
If a pupil is to be selected at random from the class what is the probability that the pupil is:

(a) A left handed boy?
(b) Right handed?



Use this tree diagram if you like

Answers and working out will be tweeted tomorrow along with two more questions in preparation for Number & Algebra.

Question 1

(a) Trapezium
(b) Parallelogram
(c) Kite
(d) Rhombus

Yesterday's solutions

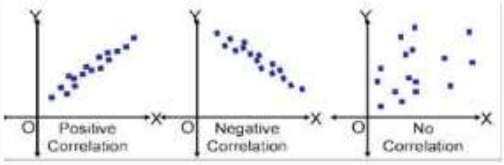
A → $y = \cos(x - 90)$ [or $y = \sin x$]
B → $y = \cos 4x$
C → $y = 3\cos x$
D → $y = (\cos x) + 1$

Question 2

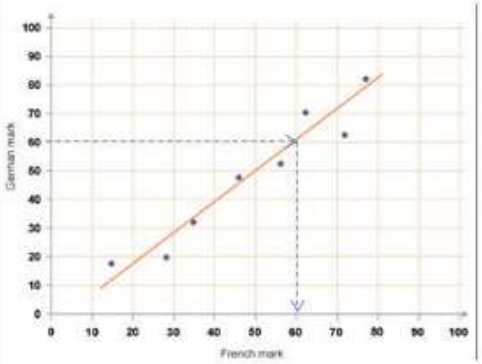
GCSE EXAM COUNTDOWN 2

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

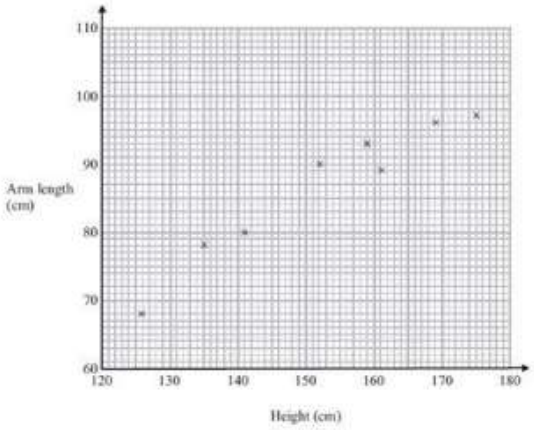
FACTS TO LEARN



To estimate a value you MUST draw a line of best fit to help – even if you are not told to!



The scatter graph shows information on the height and arm length of some year 11 students.



1. What type of correlation does the scatter graph show?
2. Estimate the height of a student who has an arm length of 90 cm.

Answers: 1. Positive 2. Answers between 154cm and 159 cm (inclusive) – must have line of best fit.

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60 Daily Tweets for GCSE Maths

Day 23 Number & Algebra

Have a go at answering these questions!

Question 1 – Foundation & Higher Tier GCSE

(a) Put the following in order, smallest first:

(i) 3.1 , 3.01 , 3.101 , 3.011 , 3.11 , 3.103

(ii) -3 , 3 , 0 , -7 , -1 , -2 , -2.2

(iii) 0.42 , 2/5 , 4% , 3/8

(b) Estimate the answer to this calculation:

$$\frac{4.1^2 \times 9.87}{0.201}$$

Question 2 – Higher Tier GCSE only

Simplify fully:

$$\frac{n^2 + 3n - 28}{n^2 - 49}$$

Answers and working out will be tweeted tomorrow along with two more questions in preparation for Algebra & Geometry.

Yesterday's solutions

Question 1

(a) (i) Primary (he will collect it himself)
(ii) Continuous (decimal values)

(b) Write a hypothesis ("There will be a positive correlation between the H & W of trees"). Measure H & W of 30 trees. Put results in table & scatter graph. Analyse data & decide whether the hypothesis was correct or not.

Question 2

(a) A left handed boy = 3/5 x 1/4 = 3/20

(a) Right handed
= [3/5 x 3/4] + [2/5 x 1/2]
= 9/20 + 2/10 = 13/20

GCSE EXAM COUNTDOWN 3

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

FACTS TO LEARN

In two-way tables you have two bits of information about each person. In the example shown we know gender and language studied.

	Spanish	French	German	Total
Boys	10	2	8	20
Girls	15	12	3	30
Total	25	14	11	50

Here 12 girls study French.
The probability of choosing a student who is female and studies French is $\frac{12}{50}$

1. Create a two way table to show the information given and then solve the question asked.

Felicity asked 100 students how they came to school one day.
Each student walked or came by bicycle or came by car.

49 of the 100 students are girls.
10 of the girls came by car.
16 boys walked.
21 of the 41 students who came by bicycle are boys.

Work out the total number of students who walked to school.

2. If a student is chosen at random what is the probability that the student is a girl who walked?

Answers: 1. 19 + 16 = 35 2. $\frac{19}{100}$

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Day 24 Algebra, Geometry & Measures

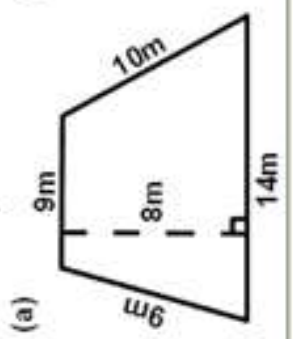
60 Daily Tweets for GCSE Maths

Have a go at answering these questions!

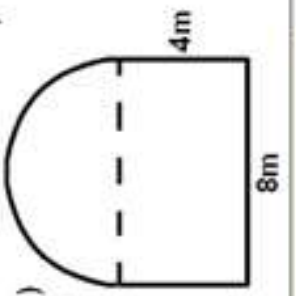
Question 1 – Foundation & Higher Tier GCSE

Calculate the perimeter and the area of these shapes:

(a)



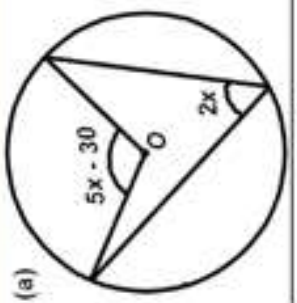
(b)



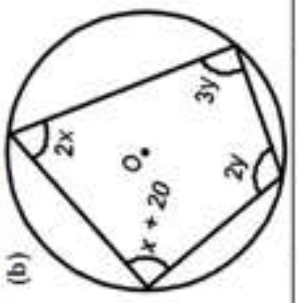
Question 2 – Higher Tier GCSE only

Form and solve equations for these two diagrams:

(a)



(b)



Answers and working out will be tweeted tomorrow along with two more questions in preparation for Statistics & Probability.

Question 1 Yesterday's solutions Question 2

(a) (i) 3.01,3.011,3.1,3.101,3.103,3.11
(ii) -7, -3, -2.2, -2, -1, 0, 3
(iii) 4%,⅘ (37.5%),⅝ (40%),0.42 (42%)

(b) $= \frac{4^2 \times 10}{0.2} = \frac{160}{0.2} = \frac{1600}{2} = 800$

Factorizes to: $\frac{(n+7)(n-4)}{(n+7)(n-7)}$

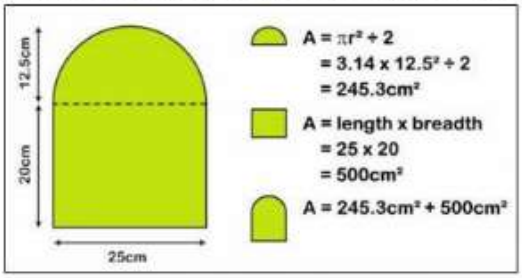
Cancelling: $\frac{n-4}{n-7}$

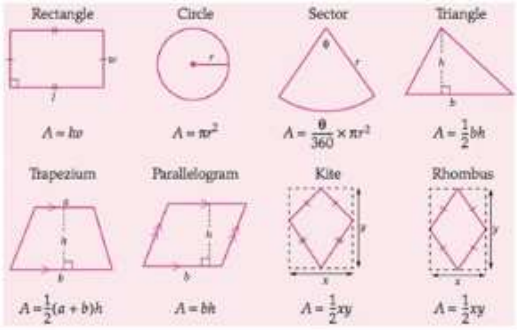
GCSE EXAM COUNTDOWN 4

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

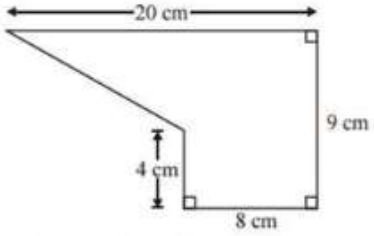
FACTS TO LEARN

To find the area of a compound shape split it into the basic shapes and find area of each.

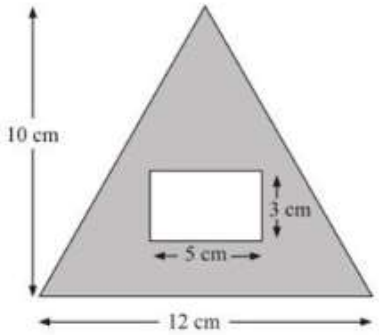




1. Work out the area of the shape below.



2. Work out the shaded area.



Answers: 1. (9 x 8) + ½(5 x 12) = 72 + 30 = 102

2. Triangle: ½(12 x 10) = 60 Rectangle: 5 x 3 = 15
Shaded Area = 60 – 15 = 45 cm²

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Have a go at answering these questions!

60 Daily Tweets for GCSE Maths

Day 25
Statistics & Probability

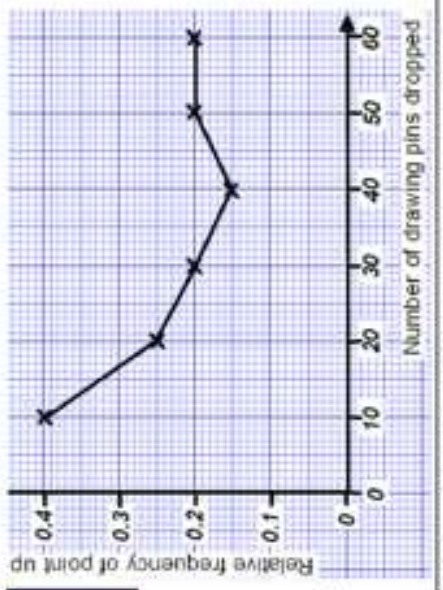
Question 1 – Foundation & Higher Tier GCSE

Yr 11 pupils at a school have signed up to exercise for charity. The ratio of boys to girls choosing to cycle is 2:1. Complete this two way table:

	Swim	Cycle	Run	Total
Boys			16	
Girls	30			86
Total		48		150

Question 2 – Higher Tier GCSE only

Olivia is dropping drawing pins in batches of 10 and Peter is noting down how many land point up. How many landed point up in the 4th batch?



Answers and working out will be tweeted tomorrow along with two more questions in preparation for Number & Algebra.

Yesterday's solutions

Question 1

(a) Area = ½ x (9 + 14) x 8 = 92m²
Perimeter = 9 + 9 + 10 + 14 = 52m

(b) Area = [½ x π x 4²] + [8 x 4] = 25.12 + 32
= 57.12m²
Perimeter = [½ x π x 8] + 4 + 8 + 4 = 28.56m

Question 2

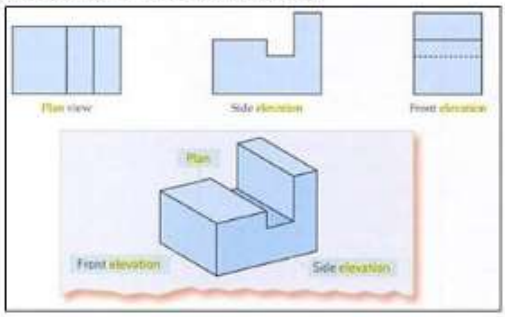
(a) 5x – 30 = 2(2x) → 5x – 30 = 4x
→ x – 30 = 0 → x = 30°

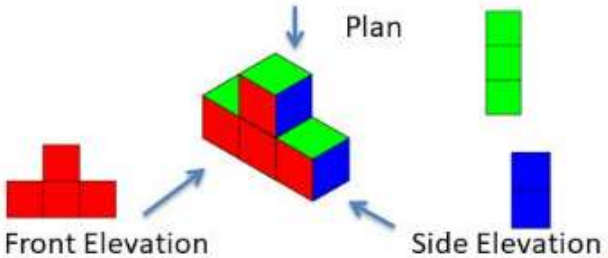
(b) 2x + 2y = 180 & x + 20 + 3y = 180
2 simultaneous equations:
→ x = 55° and y = 35°

GCSE EXAM COUNTDOWN 5

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

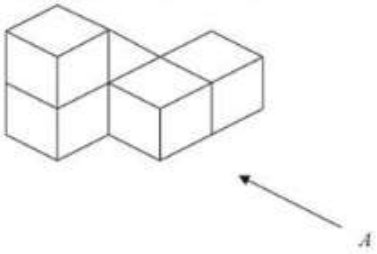
PLANS AND ELEVATIONS



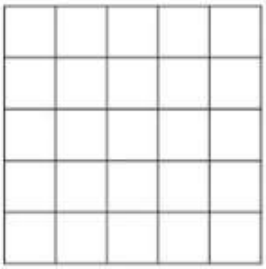


Answer:

1. The diagram shows a solid made from 5 identical cubes.



On the grid below draw the view of the solid from direction A.



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60 Daily Tweets for GCSE Maths

Day 26 Number & Algebra

Have a go at answering these questions!

Question 1 – Foundation & Higher Tier GCSE

The same washing machine is on offer at two leading retailers. Which is the cheapest machine?

Washers-R-Us
Original price £310
Offer: 30% off the original price

Suds-U-Like
Original price £350
Offer: ⅘ of the original price

(All working out needs to be shown on questions like this)

Question 2 – Higher Tier GCSE only

a) Amy has successfully substituted her quadratic's coefficients into the quadratic formula. What was the original equation?

$$\frac{5 \pm \sqrt{25 + 28}}{2}$$

b) Fully simplify: $\frac{2x-5}{4} - \frac{x+3}{5}$

Answers and working out will be tweeted tomorrow along with two more questions in preparation for Geometry & Measures.

Question 1

	Swim	Cycle	Run	Total
Boys	16	32	16	64
Girls	30	16	40	86
Total	46	48	56	150

Yesterday's solutions

After batch 1 = 10 x 0.4 = 4
After batch 2 = 20 x 0.25 = 5
After batch 3 = 30 x 0.2 = 6
After batch 4 = 40 x 0.15 = 6
∴ 0 pins landed point up in the 4th batch

Question 2

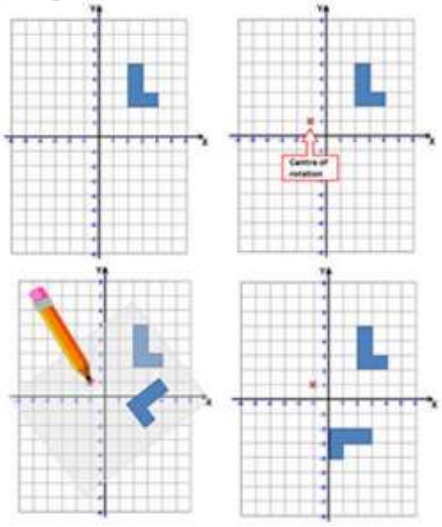
GCSE EXAM COUNTDOWN 6

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

ROTATIONS

To draw a rotation:

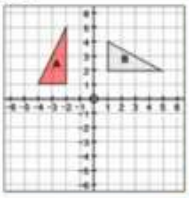
i) Mark centre of rotation
ii) Place tracing paper over diagram. Copy shape and mark centre.
iii) Place pencil point on centre and turn tracing paper through angle given.
iv) Note co-ordinates of image and take tracing paper away.
v) Draw image



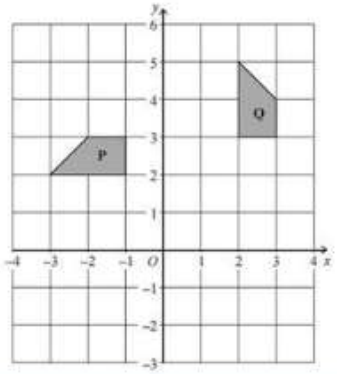
To describe the transformation state:
Rotation then give details:

- Angle
- Direction
- Centre of rotation

To get from A to B: Rotation, 90^0 clockwise about (0, 0)



1. Describe the transformation that maps P onto Q.



Answer: Rotation, 90^0 anti-clockwise, about((1, 1)

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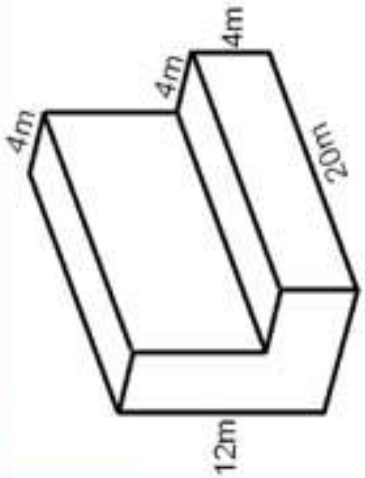
Day 27 Geometry & Measures

60 Daily Tweets for GCSE Maths

Have a go at answering these questions!

Question 1 – Foundation & Higher Tier GCSE

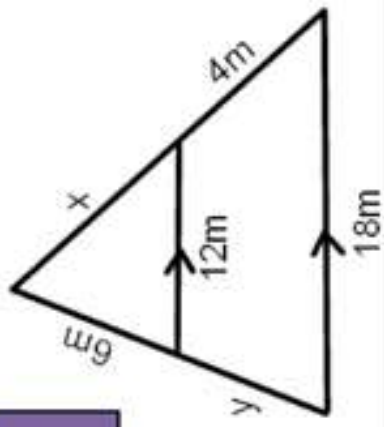
a) Calculate the volume of this prism
b) Calculate the total surface area of this prism



Question 2 – Foundation & Higher Tier GCSE

Calculate lengths x and y

[Hint: This is a similar triangles question]



Answers and working out will be tweeted tomorrow along with two more questions in preparation for Statistics & Number.

Question 1

Washers-R-Us
10% = 31 , 30% = 93 , 30% off = £217

Suds-U-Like
% of 350 = 350 ÷ 5 x 3 = £210
Therefore Suds-U-Like is best value

Yesterday's solutions

a) $x^2 - 5x - 7 = 0$

b) $= \frac{5(2x-5)-4(x+3)}{20} = \frac{6x-37}{20}$

Question 2

GCSE EXAM COUNTDOWN 7

24th May 2018 : non-calculator
7th June 2018 : calculator
12th June 2018 : calculator

REVERSE PERCENTAGES

Sometimes we are given the result of a percentage increase or decrease and we have to find the original amount.

I bought a t-shirt in a sale. It was reduced by 15% and I only paid £17.00 for it.

Price before discount. → (× 0.85%) → Price after discount.
Price after discount. → (÷ 0.85%) → Price before discount.

OR

85% of original cost = £17.00 (÷ 85)
1% of original cost = £0.20 (X 100)
100% of original cost = £20.00

1.

Jacob answered 80% of the questions in a test correctly.
He answered 32 of the questions correctly.

Work out the total number of questions in the test.

2. In a sale, normal prices are reduced by 15%.
The sale price of a CD player is £102

Work out the normal price of the CD player.

3. A garage sells cars.
It offers a discount of 20% off the normal price for cash.

Dave pays £5200 cash for a car.

Calculate the normal price of the car.

Answers: 1. 40 2. £120 3. £6500

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60 Daily Tweets for GCSE Maths

Day 28 Statistics & Number

Have a go at answering these questions!

Question 1 – Foundation & Higher Tier GCSE

a) The Mean of these five numbers is 20 and the Range is 8.
Calculate the two missing numbers:

20 20 20 ? ?

b) The Mode and Range of this set are both 12. The Median Is 12.5.
Calculate the four numbers:

? ? ? ?

Question 2 – Foundation & Higher Tier GCSE

If $U = 3.7 \times 10^5$ and $V = 1.9 \times 10^{-7}$, use your calculator to find:

a) U x V
b) 5U ÷ 2V
c) The ratio of V : U in the form 1 : n

[All answers should be left in standard form and rounded to 3 significant figures]

Answers and working out will be tweeted tomorrow along with two more questions in preparation for Number & Algebra.

Yesterday's solutions

Question 1

a) Volume = [(4 x 12) + (4 x 4)] x 20
= 64 x 20 = 1280 m³

b) Surface Area = 64+64+80+80+80
+160+160+240
= 928 m²

Question 2

Scale factor of enlargement = 18 ÷ 12 = 1.5
y = [6 x 1.5] – 6
y = 3cm
1.5x = x + 4
x = 8cm