# Day 21
## Algebra, Geometry & Measures

## Question 1 – Foundation & Higher Tier GCSE

Name the quadrilateral which has:

(a) Just one pair of parallel sides

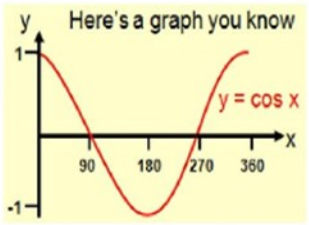
(b) An order of rotation symmetry of 2 but no lines of symmetry

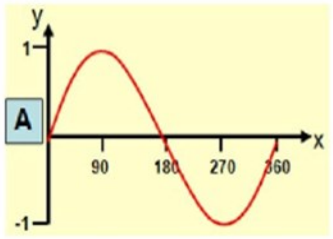
(c) 2 pairs of equal sides and 1 line of symmetry

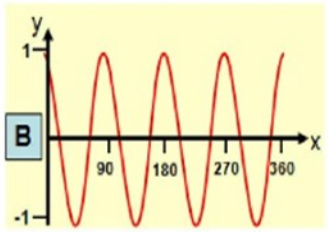
(d) 4 equal sides and 2 lines of symmetry

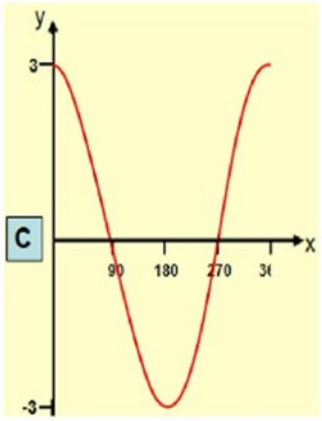
## Question 2 – Higher Tier GCSE only

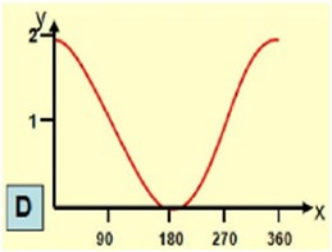
Work out the equations of graphs A, B, C & D:




## Yesterday's solutions

### Question 1

(a) Sum = $k + k + 3 + k - 5 + 4k = 7k - 2$

(b) $7k - 2 = 68 \rightarrow 7k = 70 \rightarrow k = 10$

### Question 2

$(y - a)^2 - 7 \equiv y^2 - 6y + b$

$y^2 - 2ay + a^2 - 7 \equiv y^2 - 6y + b$

Comparing sides of the identity:

$2a = 6 \rightarrow a = 3$, $a^2 - 7 = b \rightarrow b = 2$

# Day 22
## Statistics & Probability

## 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.

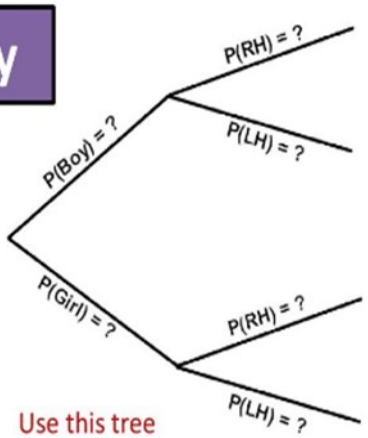
(a) Will the data he collects be:
  (i) Primary or secondary?
  (ii) Discrete or continuous?

(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

## Yesterday's solutions

### Question 1

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

### Question 2

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

# Day 23
# Number & Algebra

## 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 , $\frac{2}{5}$ , 4% , $\frac{3}{8}$

(b) Estimate the answer to this calculation:

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

## Question 2 – Higher Tier GCSE only

Simplify fully:

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

## 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 = $\frac{3}{5} \times \frac{1}{4} = \frac{3}{20}$

(a) Right handed

$= [\frac{3}{5} \times \frac{3}{4}] + [\frac{2}{5} \times \frac{1}{2}]$

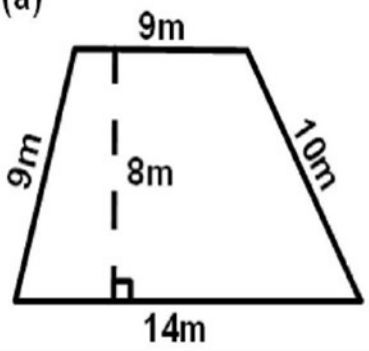
$= \frac{9}{20} + \frac{2}{10} = \frac{13}{20}$

# Day 24
## Algebra, Geometry & Measures

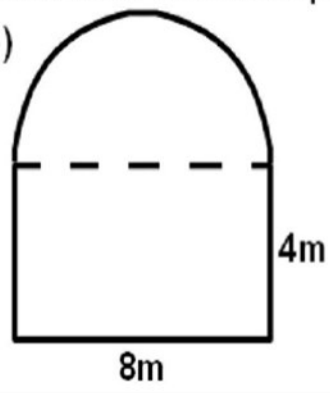
## Question 1 – Foundation & Higher Tier GCSE

Calculate the perimeter and the area of these shapes:

(a)



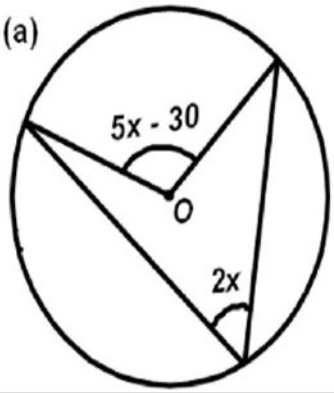

(b)



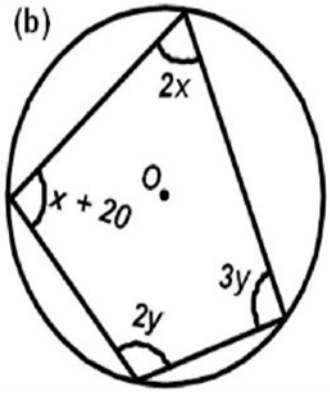

## Question 2 – Higher Tier GCSE only

Form and solve equations for these two diagrams:

(a)




(b)




## 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%, ⅜ (37.5%), ⅖ (40%), 0.42 (42%)

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

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

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

# Day 25
## Statistics & Probability

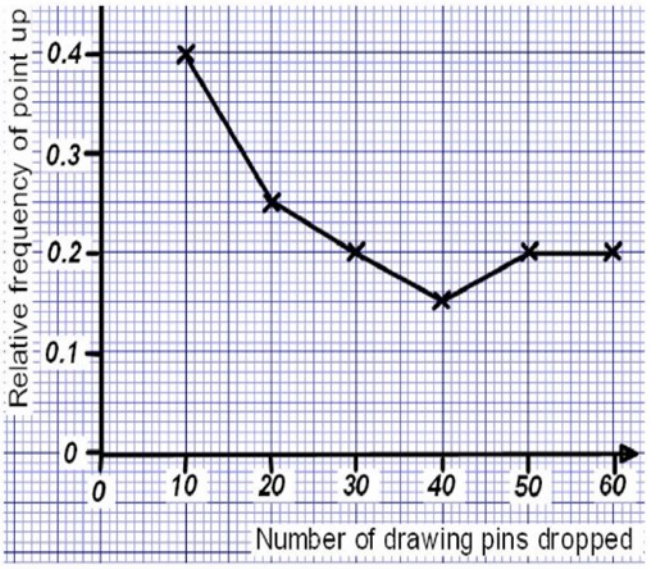
## Question 1 – Foundation & Higher Tier GCSE

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?




## 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 = 30⁰

(b) 2x + 2y = 180 & x + 20 + 3y = 180
2 simultaneous equations:
→ x = 55⁰ and y = 35⁰