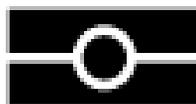


MATHS PASSPORT



PASSPORT FOUR

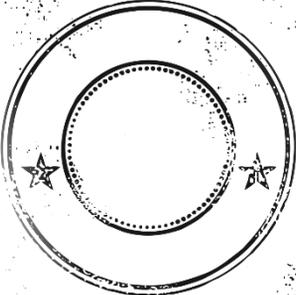
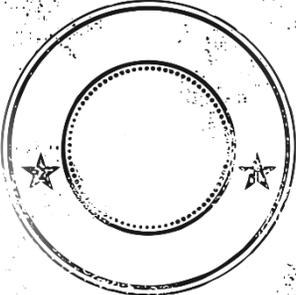
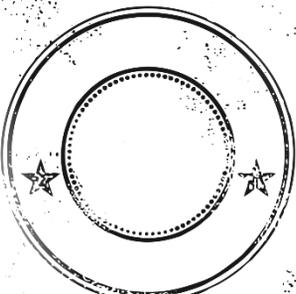
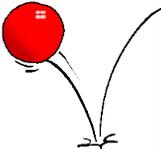
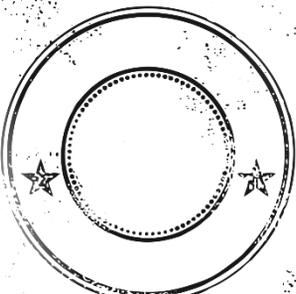
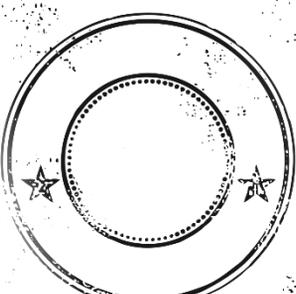
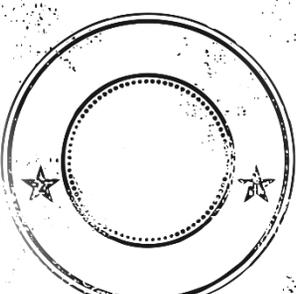


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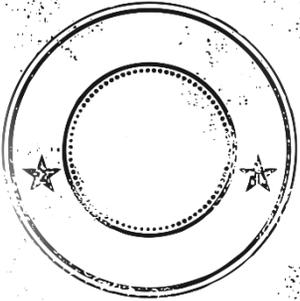
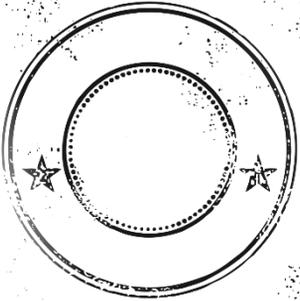
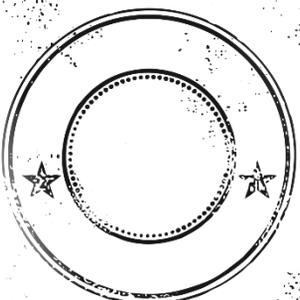
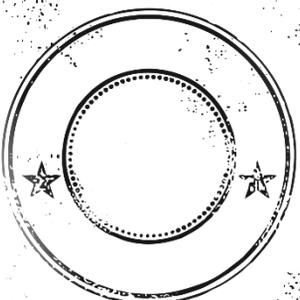
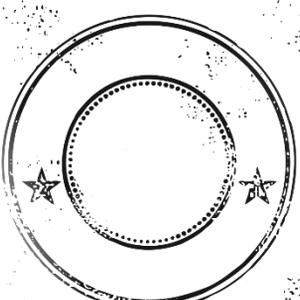
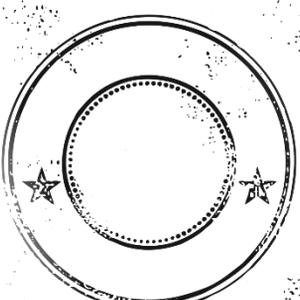
Contents

TOPICS	SCORE	TOPICS	SCORE
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2) Compound Interest		14) Speed, Distance and Time	
3) Upper and Lower Bounds		15) Volume of Prisms	
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5) Direct Proportion		17) Area of a Sector	
6) Calculating with Surds		18) Transformations	
7) Simultaneous Equations		19) Frequency Trees	
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Number Practise		Shapes and Measures Practise	
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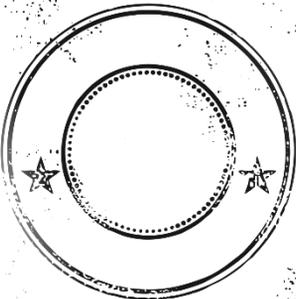
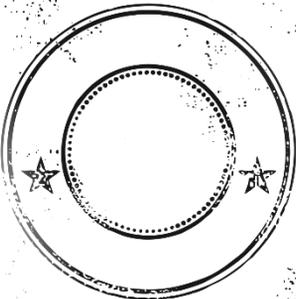
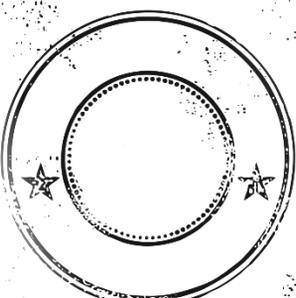
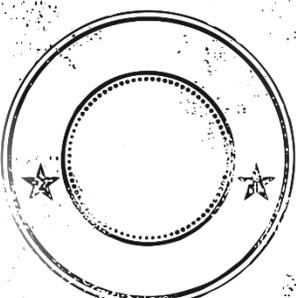
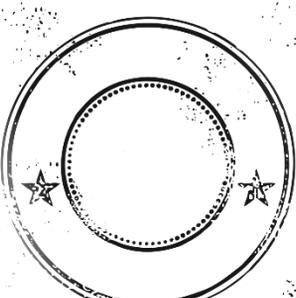
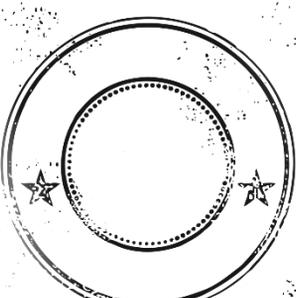
Number

TOPIC	VIDEO	PRACTISE	
<p>Reverse Percentages To be able to calculate the original amount.</p>	 https://goo.gl/1KzrRP	 https://goo.gl/64z5LU	
<p>Exam Question In a sale prices are reduced by 14%. The sale price of a TV is £326.80. Work out the normal price of the TV.</p>			
<p>Compound interest To be able to find the compound interest of an amount.</p>	 http://goo.gl/WcDFph	 http://goo.gl/jeZz2H	
<p>Exam Question A ball bounces 2m high on the first bounce. Every bounce after that the height, it bounces, decreases by 12%.</p>	<p>How high does it bounce;</p> <p>a) After 3 bounces?</p> <p>b) After 8 bounces?</p> <p>c) After 10 bounces</p> 		
<p>Bounds To be able to calculate the upper and lower bounds of amounts.</p>	 https://goo.gl/AVYWjX	 https://goo.gl/ODcN2A	
<p>Exam Question A school field is the shape of a rectangle. The length of the field is 320 m, to the nearest 10 metres. The width of the field is 128 m, to the nearest metre. Calculate the lower bound for the perimeter of the field.</p>			

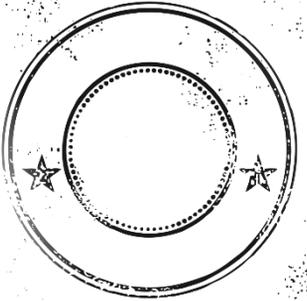
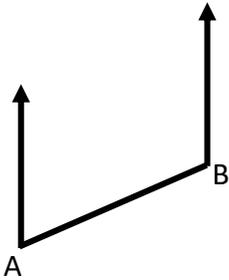
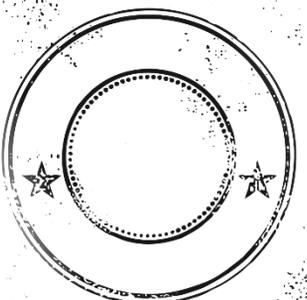
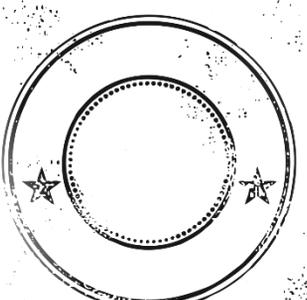
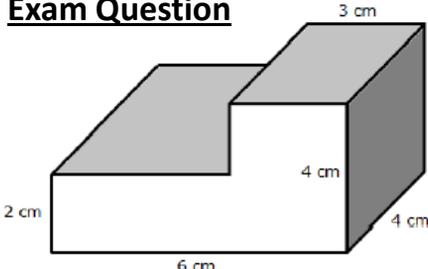
Number

TOPIC	VIDEO	PRACTISE	
<p>Error Intervals To calculate the error interval after the rounding or truncation of a number.</p>	 https://goo.gl/VFNXK3	 https://goo.gl/DDFW7v	
<p>Exam Question Calvin rounds a number, x, to two significant figures. The result is 8.3, write down the error interval for x.</p>			
<p>Direct Proportion To be able to calculate the formula for direct proportion.</p>	 https://goo.gl/nZdddb	 https://goo.gl/IIDsD2	
<p>Exam Question y is directly proportional to the square of x. $y = 400$ when $x = 10$. Calculate the value of y when $x = 5$.</p>			
<p>Calculating with Surds To be able to multiply, divide, add and subtract surds.</p>	 https://goo.gl/GzWwhK	 https://goo.gl/cVnWol	
<p>Exam Question 1) Write $\sqrt{75} - \sqrt{12}$ in the form $k\sqrt{x}$, where k and x are integers. 2) Expand and simplify $(3 + \sqrt{7})(3 - \sqrt{7})$.</p>			

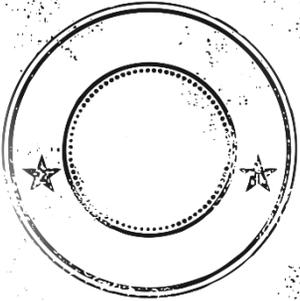
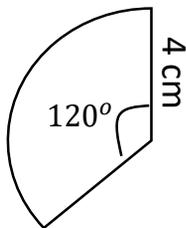
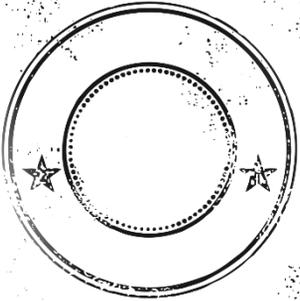
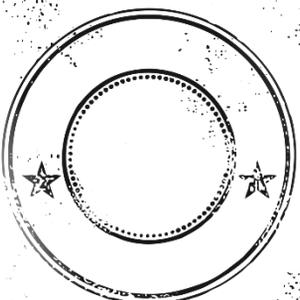
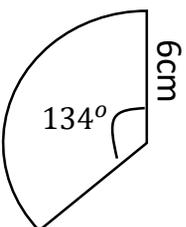
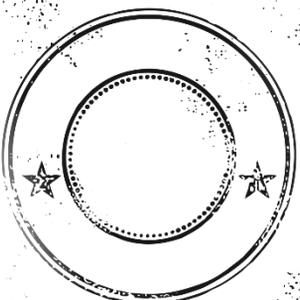
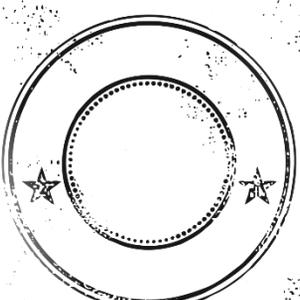
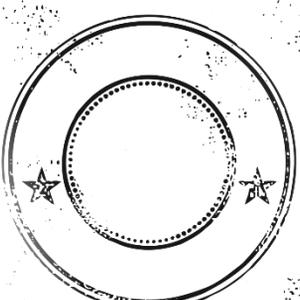
Algebra

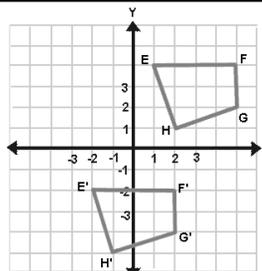
TOPIC	VIDEO	PRACTISE	
<p>Composite Functions</p> <p>To be able to substitute a function into another function.</p>	 https://goo.gl/FTCg6E	 https://goo.gl/FXCCw6	
<p>Exam Question</p> <p>If $f(x) = 4x + 5$ and $g(x) = x^2 - 2$</p> <p>1) Calculate $fg(x)$.</p> <p>2) Calculate $gf(x)$.</p>			
<p>Iterative Processes</p> <p>To be able to use iterations to estimate a solution.</p>	 https://goo.gl/mh93Pd	 https://goo.gl/ihfwmS	
<p>Exam Question</p> <p>Consider the following equation. $x^3 - 4x - 3 = 0$. An approximate solution can be found by using the following iterative process.</p> $x_{n+1} = \frac{x_n^3 - 3}{4}$ <p>Find x_2 and x_3 if $x_1 = 1$</p>			
<p>Quadratic Sequences</p> <p>To be able to calculate the nth term rule of a quadratic sequence</p>	 https://goo.gl/2jN2Hf	 https://goo.gl/nLY2Re	
<p>Exam Question</p> <p>Find the nth term rule of the following sequences.</p> <p>1) 2, 6, 12, 20, 30, ... 2) 5, 12, 25, 44,</p>			

Shapes and Measures

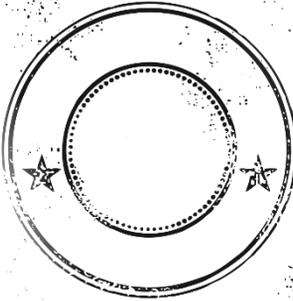
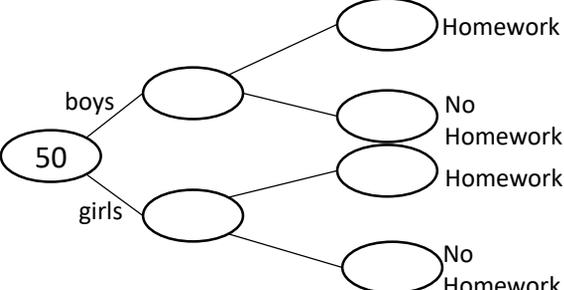
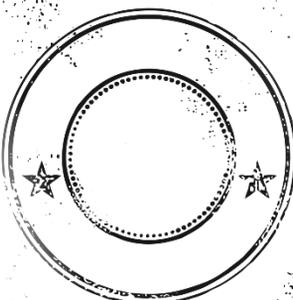
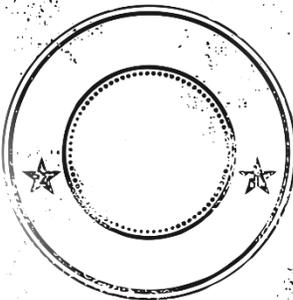
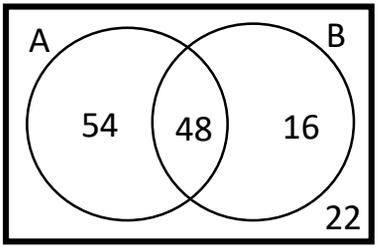
TOPIC	VIDEO	PRACTISE	
<p>Bearings</p> <p>To be able to calculate the bearing between two points.</p>	 https://goo.gl/VWqsvg	 https://goo.gl/ZLhPC5	
<p>Exam Question</p> <p>The bearing from A to B is 067°. Calculate the bearing from B to A.</p> 			
<p>Speed, Distance and Time</p> <p>To know the speed, distance, time formula so that you can solve problems.</p>	 https://goo.gl/zp348F	 https://goo.gl/dMIqC0	
<p>Exam Question</p> <p>The distance from Beckly to Mordon is 6 miles. The distance from Mordon to Heworth is 28 miles. Joe leaves Beckly at 10:00 am. He drives from Mordon to Heworth at an average speed of 60 mph. He wants to arrive at Heworth for 10:40. Work out the average speed Joe must drive between Beckly and Mordon.</p>			
<p>Volume of Prisms</p> <p>To be able to calculate the volume of any prism so that you can solve problems.</p>	 https://goo.gl/2QGdfu	 https://goo.gl/v1Kra8	
<p>Exam Question</p>  <p>Calculate the volume of the prism.</p>			

Shapes and Measures

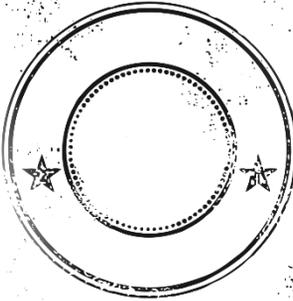
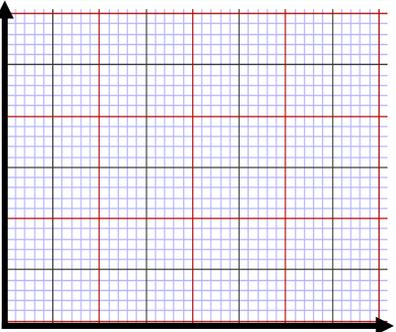
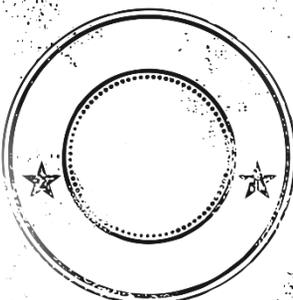
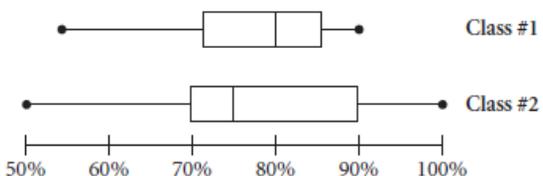
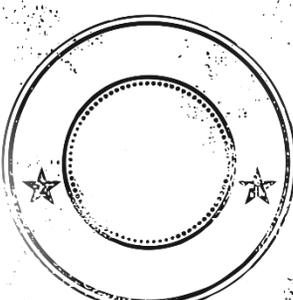
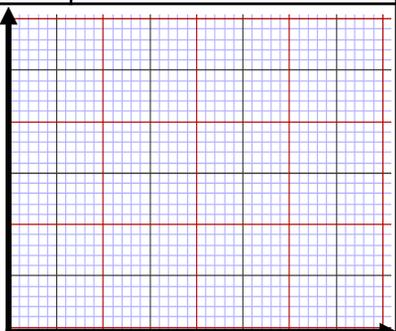
TOPIC	VIDEO	PRACTISE	
<p>Arc Length</p> <p>To be able to find the circumference of a circle so that you can find the arc length of a sector.</p>	 <p>https://goo.gl/zxHRqV</p>	 <p>https://goo.gl/8dJLIK</p>	
<p>Exam Question Find the arc length of the sector</p> 			
<p>Area of a Sector</p> <p>To be able to find the area of a sector.</p>	 <p>http://goo.gl/K8RFJs</p>	 <p>http://goo.gl/RtCsuR</p>	
<p>Exam Question Find the area of the sector</p> 			
<p>Transformations</p> <p>To be able to accurately describe transformations</p>	 <p>http://goo.gl/Ob7fe0</p>	 <p>http://goo.gl/UQnwZ8</p>	
<p>Exam Question</p> <p>a) Describe the transformation from EFGH to E'F'G'H'.</p> <p>b) Reflect EFHG in the y-axis.</p>			



Statistics

TOPIC	VIDEO	PRACTISE	
<p>Frequency Trees</p> <p>To be able to calculate probabilities from a frequency tree.</p>	 https://goo.gl/yzYbuf	 https://goo.gl/Ehx2S9	
<p>Exam Question</p> <p>50 students had some homework. 22 of these students are girls. 7 out of the 50 students didn't do their homework. 19 of the girls did their homework. Complete the frequency tree.</p>			
<p>Independent Events</p> <p>To be able to complete a probability tree so that you can find the probability of independent events.</p>	 https://goo.gl/KfQelx	 https://goo.gl/DWN9hQ	
<p>Exam Question</p> <p>There are 8 sweets in a bag, 3 lemon bonbons and 5 Haribos. I pick a sweet out of the bag, I don't like it so I put it back in and pick another. Calculate the probability of me choosing the two different sweets.</p>			
<p>Venn Diagrams</p> <p>To understand Venn Diagram notation so that you can calculate probabilities</p>	 https://goo.gl/C4yzgh	 https://goo.gl/Z1AFVq	
<p>Exam Question</p> <p>The diagram shows the number of students in a year group who are right handed (set A) and male (set B).</p> <p>1. How many students are in the year group altogether?</p> <p>2. Calculate the probability of selecting a male who is right handed.</p>			

Statistics

TOPIC	VIDEO	PRACTISE											
<p>Cumulative Frequency</p> <p>To be able to plot a cumulative frequency graph</p>	 http://goo.gl/9uM8IG	 http://goo.gl/96dwcZ											
<p>Exam Question</p> <p>Draw a cumulative frequency graph for the height of the plants.</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Height (cm)</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>$0 < h \leq 10$</td> <td>7</td> </tr> <tr> <td>$10 < h \leq 20$</td> <td>8</td> </tr> <tr> <td>$20 < h \leq 30$</td> <td>6</td> </tr> <tr> <td>$30 < h \leq 40$</td> <td>9</td> </tr> </tbody> </table>		Height (cm)	Frequency	$0 < h \leq 10$	7	$10 < h \leq 20$	8	$20 < h \leq 30$	6	$30 < h \leq 40$	9		
Height (cm)	Frequency												
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$10 < h \leq 20$	8												
$20 < h \leq 30$	6												
$30 < h \leq 40$	9												
<p>Box plots</p> <p>To be able to interpret box plots.</p>	 http://goo.gl/4X2zI9	 http://goo.gl/96dwcZ											
<p>Exam Question</p> <p>Compare the two box plots.</p> <p style="text-align: center;">Algebra Scores</p> 													
<p>Histograms</p> <p>To be able to calculate the frequency density so that you can draw a histogram.</p>	 https://goo.gl/57BT1X	 https://goo.gl/RP2bzx											
<p>Exam Question</p> <p>Draw a histogram for the height of the garden gnomes.</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Height (cm)</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>$5 < h \leq 10$</td> <td>12</td> </tr> <tr> <td>$10 < h \leq 20$</td> <td>27</td> </tr> <tr> <td>$20 < h \leq 30$</td> <td>22</td> </tr> <tr> <td>$30 < h \leq 35$</td> <td>15</td> </tr> </tbody> </table>		Height (cm)	Frequency	$5 < h \leq 10$	12	$10 < h \leq 20$	27	$20 < h \leq 30$	22	$30 < h \leq 35$	15		
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$5 < h \leq 10$	12												
$10 < h \leq 20$	27												
$20 < h \leq 30$	22												
$30 < h \leq 35$	15												

Number

Evaluate the following:

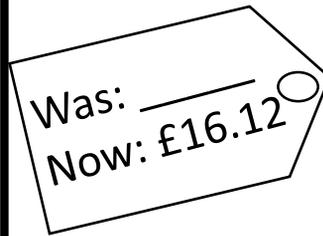
a) 4^0

b) 5^3

c) $64^{\frac{1}{2}}$

d) 3^{-7}

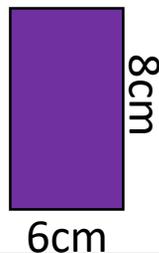
There is a 45% sale.
How much did the doll originally cost?



You buy a new car for £2,500. Your car depreciates in value by 4% each year. How much is it worth after 7 years?



What is the maximum and minimum areas of this rectangle?



Write the following as fractions.

a) 0.3333333.....

b) 0.7676767676.....

c) 0.428428428428.....

Simplify the following

a) $\sqrt{24}$

b) $\sqrt{5} \times \sqrt{7}$

c) $(\sqrt{3} + 4)(\sqrt{3} - 2)$

It is activity day 15% of students stay in school, $\frac{7}{20}$ go shopping. What percentage of pupils go to the cinema?

If there are 1,400 students how many went to the cinema?

Calculate the following:

a) $3\frac{4}{5} - 2\frac{1}{4}$

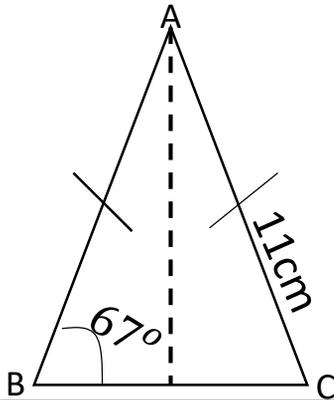
b) $4\frac{1}{3} \times 5\frac{3}{4}$

Algebra

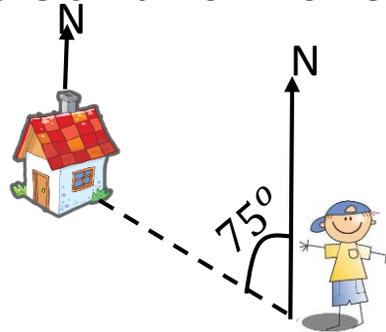
<p>Find the midpoint of the following coordinates.</p> <p>$(-4,6,10)$ $(10,-8,6)$</p>	<p>Solve the following inequality</p> $4 \leq 2x + 8 < 12$
<p>Use the quadratic formula to solve.</p> $x^2 - 4x - 8 = 0$	<p>Solve the following pair of simultaneous equations.</p> $3x + 2y = 13$ $5x - 4y = 18$
<p>Factorise the following expressions:</p> <p>a) $4x + 20$</p> <p>b) $3y^2 + 12y$</p> <p>c) $x^2 + 4x - 21$</p>	<p>The equation of a line is</p> $y = 2x + 5$ <p>Write the equation of a line that is:</p> <p>a) Parallel to $y = 2x + 5$</p> <p>b) Perpendicular to $y = 2x + 5$</p>
<p>Solve using trial and improvement to 1dp.</p> $2x^2 - 3x = 47$	<p>Change the subject to x.</p> <p>a) $3x + t = y$</p> <p>b) $\frac{x}{p} - pr = z$</p> <p>c) $t(x + r) = p$</p>

Shapes and Measures

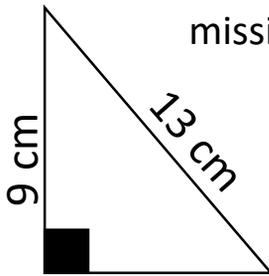
Find the area of the triangle



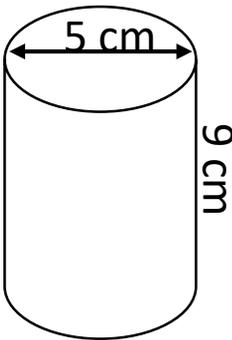
Calculate the bearing of the child from home.



Calculate the missing length.

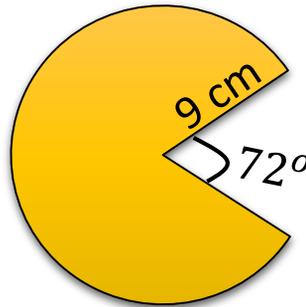


A polygon has an interior angle of 156° . How many sides does it have?

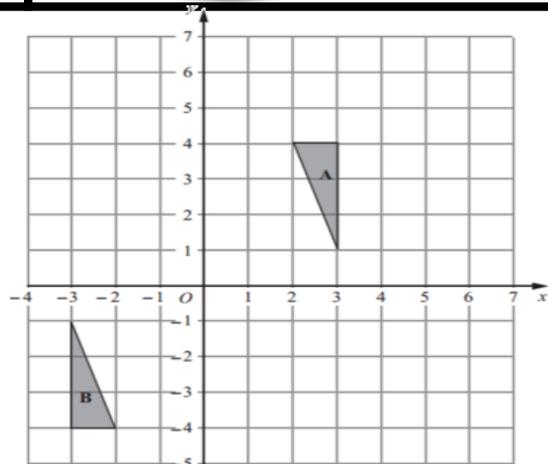


Calculate the volume and surface area of the cylinder.

Calculate the area and perimeter of Pacman.



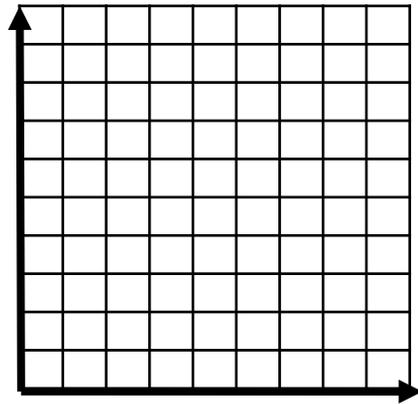
Describe fully the single transformation that maps A to B



Statistics

Draw a frequency polygon.

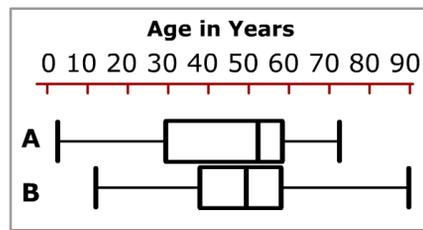
Height (cm)	Frequency
$0 < h \leq 10$	9
$10 < h \leq 20$	7
$20 < h \leq 40$	8
$40 < h \leq 50$	6



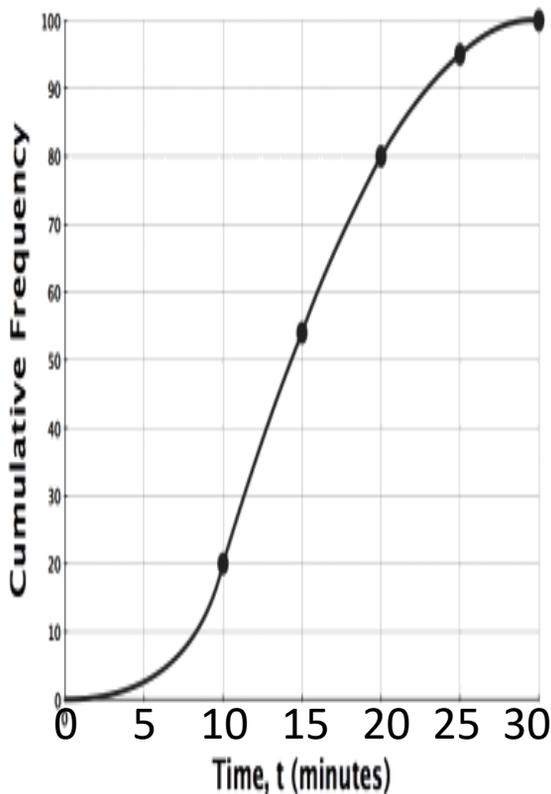
Estimate the mean from the table.

Height (cm)	Frequency
$0 < h \leq 10$	9
$10 < h \leq 20$	7
$20 < h \leq 40$	8
$40 < h \leq 50$	6

Make comparisons between the ages at two separate golf clubs.



Calculate the Interquartile Range



The probability of winning a game of tiddly winks is $\frac{2}{5}$.
If I play the game 150 times, how many times should I expect to win?

A coin and a dice are thrown at the same time. Calculate the probability I get a head and an even number.

GCSE Revision

Available	Tier	Grades
Passport One	Foundation	1-4
Passport Two	Foundation	3-4
Passport Three	Foundation/ Higher	4-5
Passport Four	Higher	5-6
Passport Five	Higher	7-9

Exam Tips

1) Highlight key words and measurements in the exam questions with a yellow highlighter.

E.g. 3 significant figures.



2) Show all of your working out. Whatever you type into your calculator should be written down as well.

3) Make sure your working out is clear by using sub headings if necessary.

4) Remember your units of measure on answers to the question.

5) Remember you can sometimes break a task into separate parts by using the sentences.

6) Make sure you know how to reset your calculator and check it is in degrees mode.

