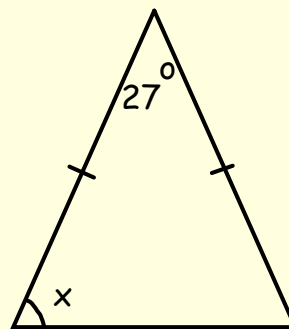


Starter

1) Find the missing angle,  $x$ .



2) Using the quadratic formula find

the coordinates of the roots of the equation  $y = 2x^2 + 6x - 3$

Similar Figures Exam Questions

**Today we are learning...**

How to answer exam style questions on similarity.

**I will know if I have been successful if...**

I can find a scale factor to multiply by.

I can square or cube the scale factor as required.

I understand what to include in my working to obtain full marks.



2018 Answer

Question		Generic scheme	Illustrative scheme	Max mark
18.	(a)	<p><u>Method 1</u></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> state linear scale factor</li> <li>•<sup>2</sup> know to multiply volume by cube of linear scale factor</li> <li>•<sup>3</sup> correct calculation (must involve a power of the scale factor), valid comparison and conclusion</li> </ul>	<p><u>Method 1</u></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> eg <math>\frac{24}{16}</math> or equivalent</li> <li>•<sup>2</sup> <math>576 \times \left(\frac{24}{16}\right)^3</math></li> <li>•<sup>3</sup> <math>1944 \neq 1125</math>, so the cartons are not similar</li> </ul>	3

2018 Answer

<p><u>Method 2</u></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> state linear scale factor</li> <li>•<sup>2</sup> know to divide volume by cube of linear scale factor</li> <li>•<sup>3</sup> correct calculation (must involve a power of the scale factor), valid comparison and conclusion</li> </ul>	<p><u>Method 2</u></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> eg <math>\frac{16}{24}</math> or equivalent</li> <li>•<sup>2</sup> <math>576 \div \left(\frac{16}{24}\right)^3</math></li> <li>•<sup>3</sup> <math>1944 \neq 1125</math>, so the cartons are not similar</li> </ul>
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2017 Answer				
15.		<p>Ans: 6.5</p> <p><u>Method 1</u></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> find scale factor</li> <li>•<sup>2</sup> form equation</li> <li>•<sup>3</sup> find <math>x</math></li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\frac{5}{7}</math> or <math>\frac{7}{5}</math></li> <li>•<sup>2</sup> <math>(x =) \frac{5}{7}(x + 2 \cdot 6)</math> or <math>\frac{7}{5}x = x + 2 \cdot 6</math></li> <li>•<sup>3</sup> 6.5</li> </ul>	3

2017 Answer				
		<p><u>Method 4</u></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> state ratio</li> <li>•<sup>2</sup> start to solve</li> <li>•<sup>3</sup> find <math>x</math></li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\frac{2}{7}PR = 2 \cdot 6</math></li> <li>•<sup>2</sup> <math>PR = \frac{7}{2} \times 2 \cdot 6 (= 9 \cdot 1)</math></li> <li>•<sup>3</sup> <math>(9 \cdot 1 - 2 \cdot 6 =) 6 \cdot 5</math></li> </ul>	

2016 Answer

Question	Generic Scheme	Illustrative Scheme	Max Mark
11.	<p>Ans: £4.95</p> <p>Method 1</p> <ul style="list-style-type: none"> <li>•<sup>1</sup> linear scale factor</li> <li>•<sup>2</sup> know to multiply cost by the square of the linear scale factor</li> <li>•<sup>3</sup> find cost of smaller picture (calculation must involve a power of the scale factor)</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\frac{60}{100}</math></li> <li>•<sup>2</sup> <math>13.75 \times \left(\frac{60}{100}\right)^2</math></li> <li>•<sup>3</sup> (£)4.95</li> </ul>	

2015 Answer

Question	Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
9.	<p>Ans: 225 cm<sup>2</sup></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> linear scale factor</li> <li>•<sup>2</sup> know how to find area of triangle PRS</li> <li>•<sup>3</sup> find area of triangle PRS</li> <li>•<sup>4</sup> find area of quadrilateral PQTS</li> </ul>	4	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\frac{30}{24}</math></li> <li>•<sup>2</sup> <math>\left(\frac{30}{24}\right)^2 \times 400</math></li> <li>•<sup>3</sup> 625</li> <li>•<sup>4</sup> 225</li> </ul>

Starter

1) True or false?  $\cos^2(x) = 1 + \sin^2(x)$

Why?

2) Solve  $1 + 4\sin(x) = 3$  for  $0 < x < 360$

Sketching Trigonometric Graphs

**Today we are learning...**

How to sketch a variety of trigonometric graphs.

**I will know if I have been successful if...**

I can complete a table of values using a calculator.

I can plot the points from the table of values.

I can state the period and amplitude of a curve.



Plotting  $y = \sin(x)$

1) Complete the table of values.

Round your values to 2 decimal places.

x	0	45	90	135	180	225	270	315	360
y									

Plotting  $y = \sin(x)$

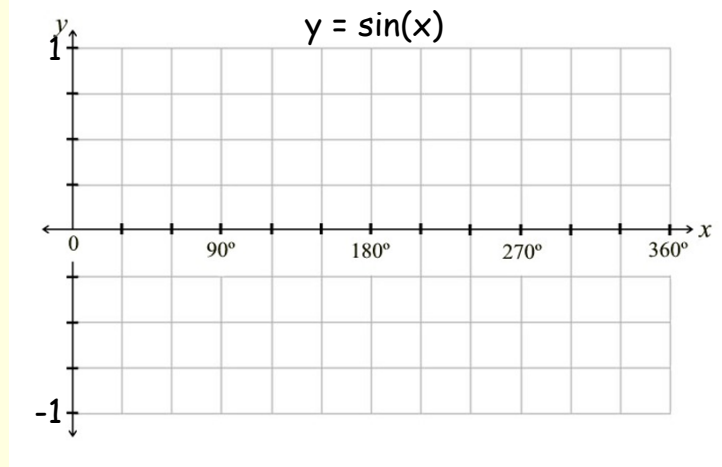
1) Complete the table of values.

Round your values to 2 decimal places.

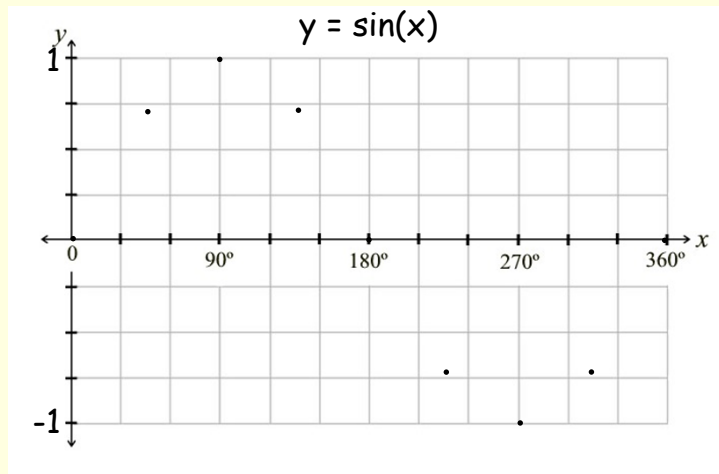
x	0	45	90	135	180	225	270	315	360
y	0	0.71	1	0.71	0	-0.71	-1	-0.71	0

2) Plotting the points from the table.

x	0	45	90	135	180	225	270	315	360
y	0	0.71	1	0.71	0	-0.71	-1	-0.71	0



3) State the amplitude and period.



Amplitude =

Period =

### Checklist

I will know if I have been successful if...

- 1) I can **complete a table** of values using a calculator.
- 2) I can **plot the points** from the table of values.
- 3) I can **state the period and amplitude** of a curve.



### Desmos

Using the same table of values can you draw these functions?

- 1)  $y = \cos(x)$
- 2)  $y = \tan(x)$

Challenge

- 3)  $y = 2\sin(x)$
- 4)  $y = \sin(2x)$
- 5)  $y = 3\cos(4x) - 1$



### Transforming Trigonometric Graphs

**Today we are learning...**

How to transform a variety of trigonometric graphs.

**I will know if I have been successful if...**

I can complete a table of values using a calculator.

I can plot the points from the table of values.

I can state the period and amplitude of a curve.



### Example 1

Sketch  $y = 2\cos(x)$

x	0	45	90	135	180	225	270	315	360
y									

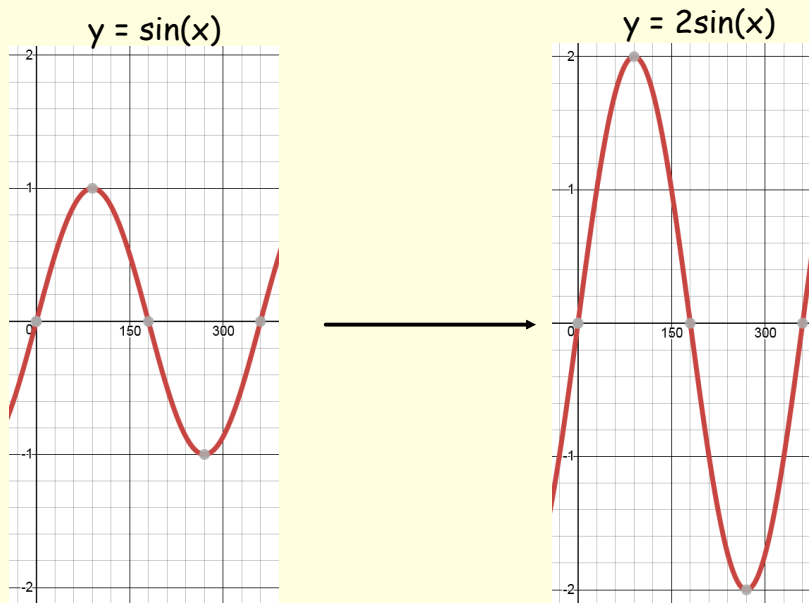
Example 2

Sketch  $y = 1.5\sin(x)$

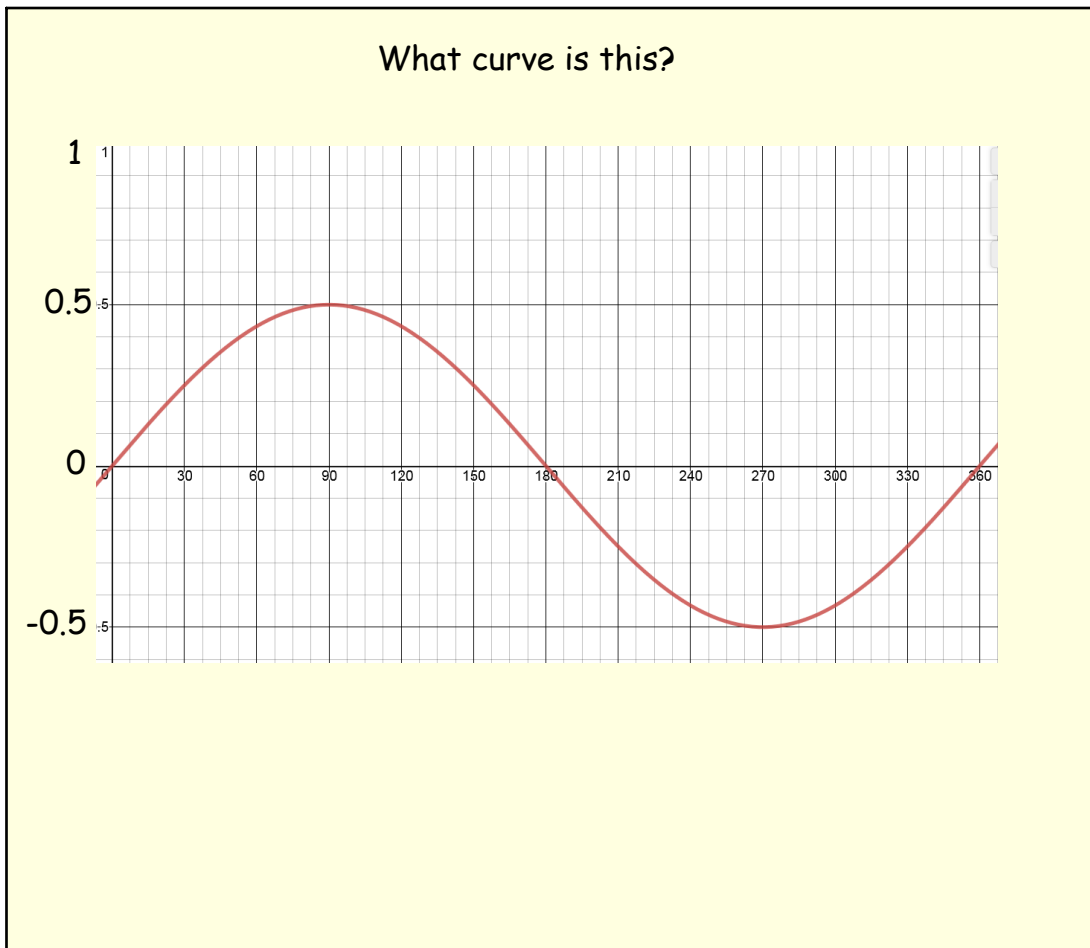
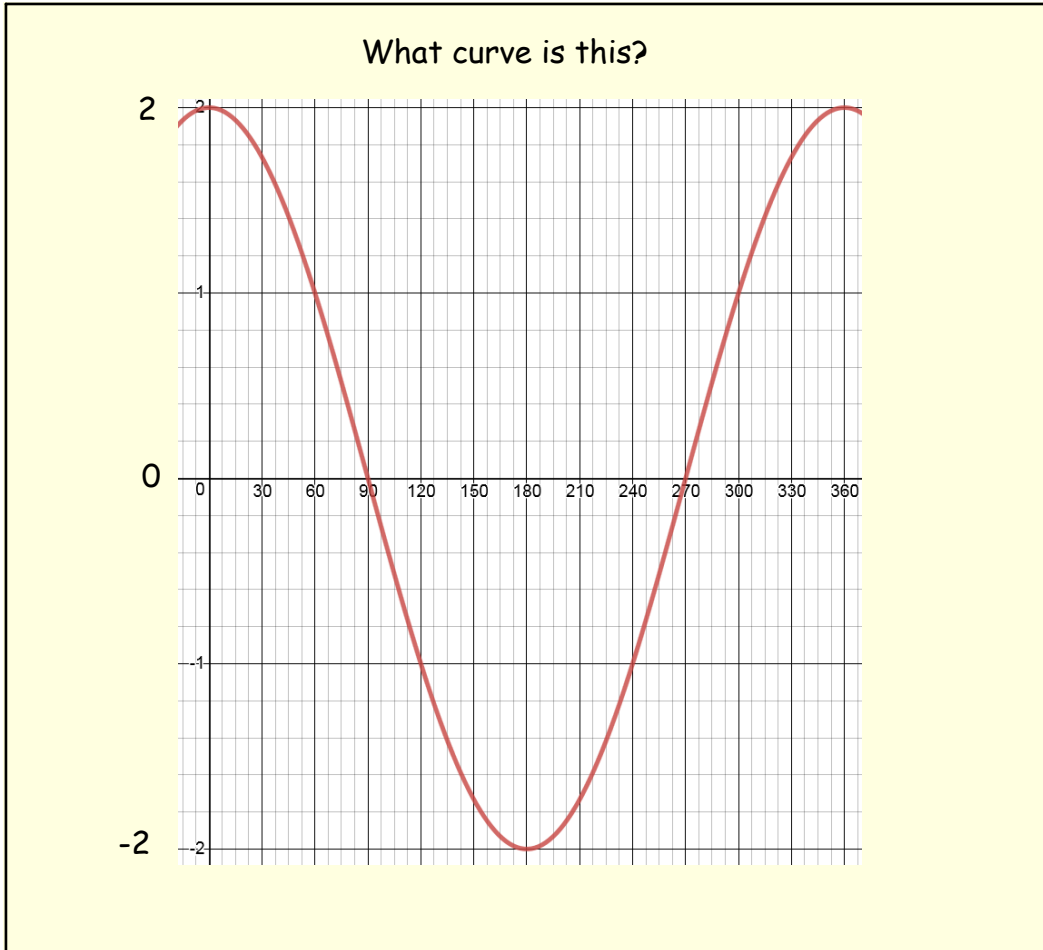
x	0	45	90	135	180	225	270	315	360
y									

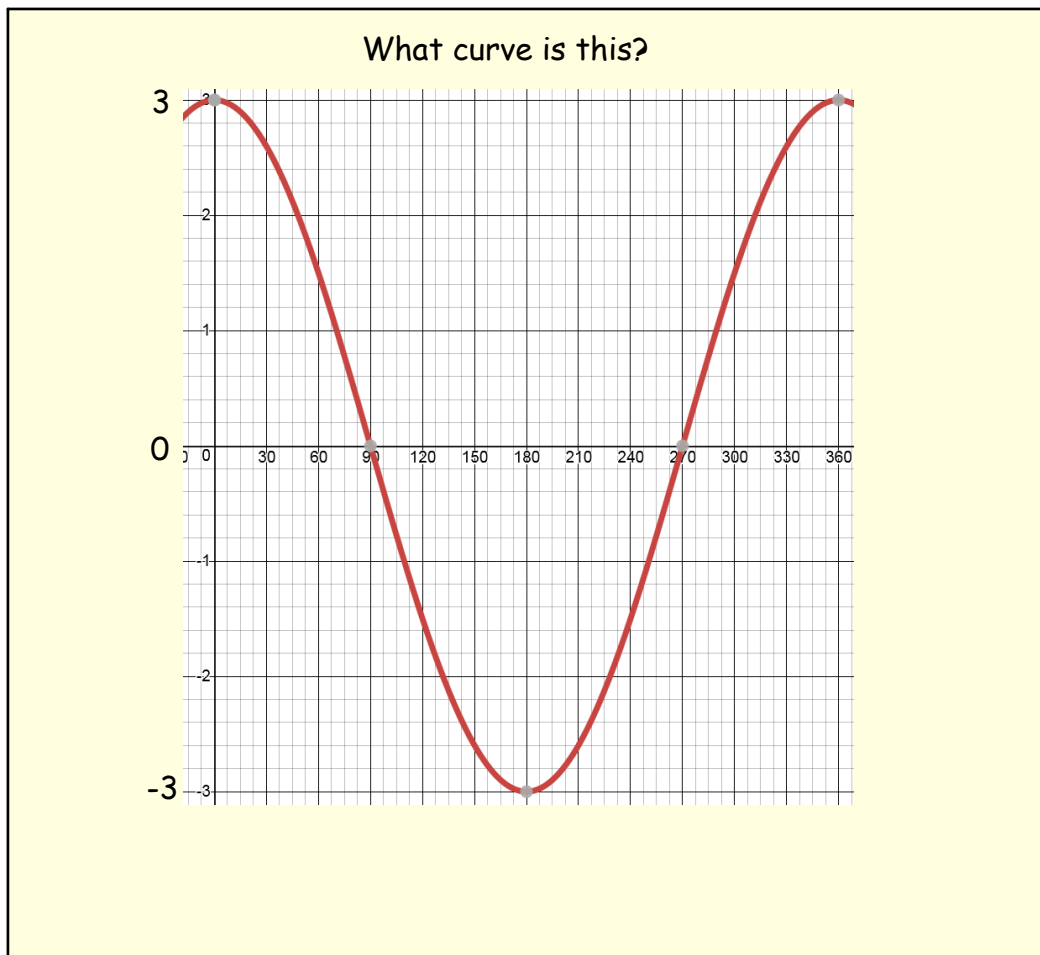
$a\sin(x)$  or  $a\cos(x)$

Multiplying the trigonometric function stretches the graph in the y direction.



National 5 Slides WB 1st October Trigonometry





#### 4.1 Working with Trigonometric Functions

##### Question 1

