

## Direct proportion - Worksheet

### Skill

#### Group A - Finding the value of items

Work out:

**1)** 5 items cost 30p.

Find the cost of 7 items.

**2)** 5 items cost 30p.

Find the cost of 4 items.

**3)** 5 items cost 30p.

Find the cost of 9 items.

**4)** 2 items cost 36p.

Find the cost of 5 items.

**5)** 9 items cost 36p.

Find the cost of 5 items.

**6)** 12 items cost 36p.

Find the cost of 5 items.

**7)** 6 items cost 90p.

Find the cost of 4 items.

**8)** 6 items cost 90p.

Find the cost of 11 items.

**9)** 6 items cost 90p.

Find the cost of 20 items.

**10)** 3 items cost £1. 20.

Find the cost of 9 items.

**11)** 4 items cost £1. 20.

Find the cost of 9 items.

**12)** 10 items cost £1. 20.

Find the cost of 9 items.

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#### Group B - Direct proportion equations

Work out:

**1)**  $y = 4x$

Work out the value of  $y$  when  
 $x = 5$ .

**2)**  $y = 4x$

Work out the value of  $y$  when  
 $x = 6$ .

**3)**  $y = 4x$

Work out the value of  $y$  when  
 $x = 11$ .

**4)**  $y = 5x$

Work out the value of  $y$  when  
 $x = 3$ .

**5)**  $y = 6x$

Work out the value of  $y$  when  
 $x = 3$ .

**6)**  $y = 9x$

Work out the value of  $y$  when  
 $x = 3$ .

**7)**  $y = 6x$

Work out the value of  $y$  when  
 $x = 2$ .

**8)**  $y = 6x$

Work out the value of  $y$  when  
 $x = 6$ .

**9)**  $y = 6x$

Work out the value of  $y$  when  
 $x = 9$ .

**10)**  $y = 4x$

Work out the value of  $y$  when  
 $x = 7$ .

**11)**  $y = 8x$

Work out the value of  $y$  when  
 $x = 7$ .

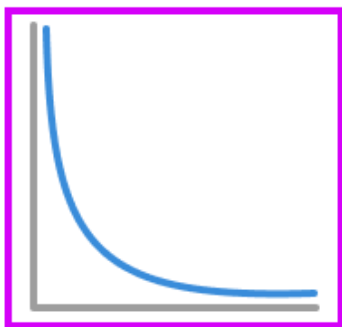
**12)**  $y = 15x$

Work out the value of  $y$  when  
 $x = 7$ .

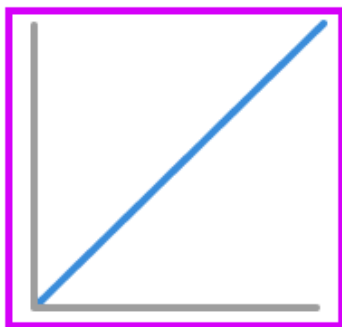
### Group C - Direct proportion graphs

Identify the graphs representing direct proportion:

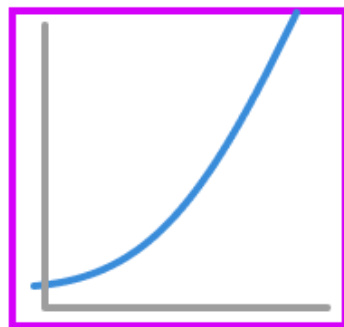
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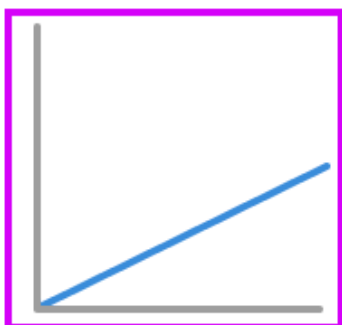
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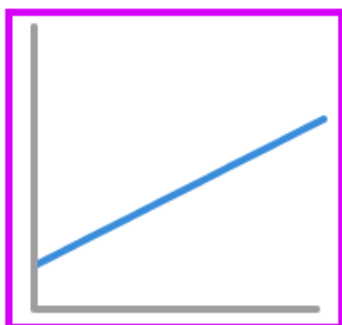
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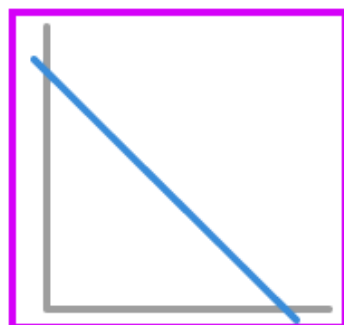
4)



5)



6)



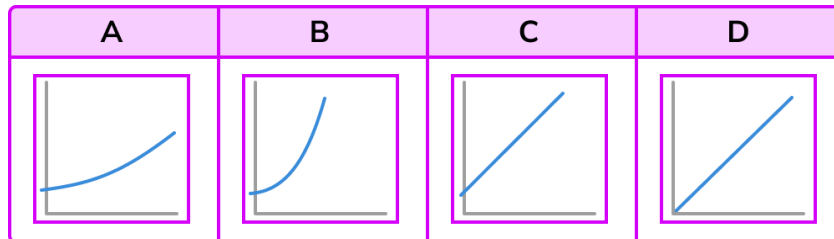
## Direct proportion - Worksheet

### Applied

- 1) (a)** 4 pears cost £2.80  
Find the cost of 9 pears.
- (b)** 5 apples cost £2.40  
Find the cost of 7 apples.
- 2) (a)** 5 packets of seeds weigh 400 grams.  
Find the weight of 7 packets of seeds.
- (b)** 8 packets of dried fruit weigh 480 grams.  
Find the weight of 5 packets of dried fruit.
- 3) (a)**  $y$  is directly proportional to  $x$ .  
 $y$  is given by the formula  
 $y = 5x$   
Find the value of  $y$  when  $x = 8$ .
- (b)**  $c$  is directly proportional to  $r$ .  
 $c$  is given by the formula  
 $c = 6r$   
Find the value of  $c$  when  $r = 4.2$ .
- 4) (a)**  $y$  is directly proportional to  $x^2$ .  
 $y$  is given by the formula  
 $y = 5x^2$   
Find the value of  $y$  when  $x = 3$ .
- (b)**  $a$  is directly proportional to  $r^2$ .  
 $a$  is given by the formula  
 $a = 3r^2$   
Find the value of  $a$  when  $r = 7.8$ .

## Direct proportion - Exam Questions

- 1) Here are four graphs.



.....  
(1 mark)

State which graph represents direct proportionality.

- 2) 500 sheets of paper weigh 2.4 kg.  
Work out the weight of 60 sheets of paper.

.....kg  
(2 marks)

- 3)  $m$  is directly proportional to  $p^2$ .

.....  
(2 marks)

$m$  is given by the formula:  $m = 50p^2$

Work out the value of  $m$  when  $p = 3$ .

- 4) A recipe for vanilla cheesecake needs 240 grams of soft cheese.  
The lemon cheesecake will have 8 proportions.

.....  
(4 marks)

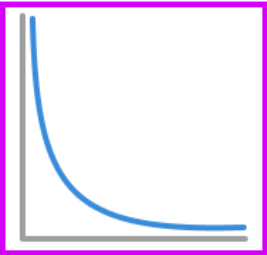
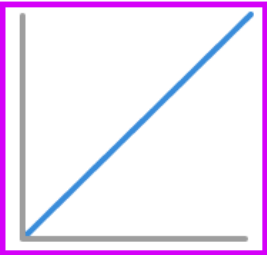
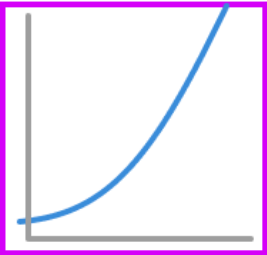
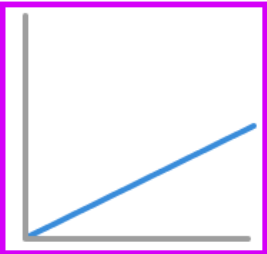
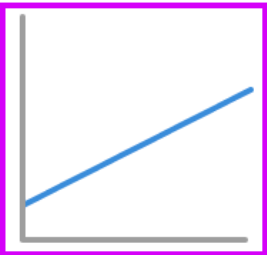
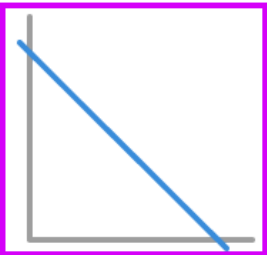
Soft cheese is sold in 300 gram packets.  
The packets cost £1.45 each.

Penny wants to make enough lemon cheesecake for 24 portions.  
Calculate the cost of soft cheese for Penny to make 24 portions of cheese cake.

## Direct proportion - Answers

	Question	Answer
	Skill Questions	
Group A	<p>Work out:</p> <p><b>1)</b> 5 items cost 30p. Find the cost of 7 items.</p> <p><b>2)</b> 5 items cost 30p. Find the cost of 4 items.</p> <p><b>3)</b> 5 items cost 30p. Find the cost of 9 items.</p> <p><b>4)</b> 2 items cost 36p. Find the cost of 5 items.</p> <p><b>5)</b> 9 items cost 36p. Find the cost of 5 items.</p> <p><b>6)</b> 12 items cost 36p. Find the cost of 5 items.</p> <p><b>7)</b> 6 items cost 90p. Find the cost of 4 items.</p> <p><b>8)</b> 6 items cost 90p. Find the cost of 11 items.</p> <p><b>9)</b> 6 items cost 90p. Find the cost of 20 items.</p> <p><b>10)</b> 3 items cost £1. 20. Find the cost of 9 items.</p> <p><b>11)</b> 4 items cost £1. 20. Find the cost of 9 items.</p>	<p><b>1)</b> 42p</p> <p><b>2)</b> 24p</p> <p><b>3)</b> 54p</p> <p><b>4)</b> 90p</p> <p><b>5)</b> 20p</p> <p><b>6)</b> 15p</p> <p><b>7)</b> 60p</p> <p><b>8)</b> £1. 65</p> <p><b>9)</b> £3. 00</p> <p><b>10)</b> £3. 60</p> <p><b>11)</b> £2. 70</p>

	<b>12)</b> 10 items cost £1. 20. Find the cost of 9 items.	<b>12)</b> £1. 08
Group B	<p>Work out:</p> <p><b>1)</b> <math>y = 4x</math> Work out the value of <math>y</math> when <math>x = 5</math>.</p> <p><b>2)</b> <math>y = 4x</math> Work out the value of <math>y</math> when <math>x = 6</math>.</p> <p><b>3)</b> <math>y = 4x</math> Work out the value of <math>y</math> when <math>x = 11</math>.</p> <p><b>4)</b> <math>y = 5x</math> Work out the value of <math>y</math> when <math>x = 3</math>.</p> <p><b>5)</b> <math>y = 6x</math> Work out the value of <math>y</math> when <math>x = 3</math>.</p> <p><b>6)</b> <math>y = 9x</math> Work out the value of <math>y</math> when <math>x = 3</math>.</p> <p><b>7)</b> <math>y = 6x</math> Work out the value of <math>y</math> when <math>x = 2</math>.</p> <p><b>8)</b> <math>y = 6x</math> Work out the value of <math>y</math> when <math>x = 6</math>.</p> <p><b>9)</b> <math>y = 6x</math> Work out the value of <math>y</math> when <math>x = 9</math>.</p> <p><b>10)</b> <math>y = 4x</math> Work out the value of <math>y</math> when <math>x = 7</math>.</p> <p><b>11)</b> <math>y = 8x</math> Work out the value of <math>y</math> when <math>x = 7</math>.</p> <p><b>12)</b> <math>y = 15x</math> Work out the value of <math>y</math> when <math>x = 7</math>.</p>	<p><b>1)</b> <math>y = 20</math></p> <p><b>2)</b> <math>y = 24</math></p> <p><b>3)</b> <math>y = 44</math></p> <p><b>4)</b> <math>y = 15</math></p> <p><b>5)</b> <math>y = 18</math></p> <p><b>6)</b> <math>y = 27</math></p> <p><b>7)</b> <math>y = 12</math></p> <p><b>8)</b> <math>y = 36</math></p> <p><b>9)</b> <math>y = 54</math></p> <p><b>10)</b> <math>y = 28</math></p> <p><b>11)</b> <math>y = 56</math></p> <p><b>12)</b> <math>y = 105</math></p>



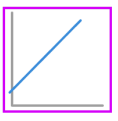
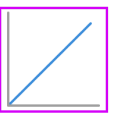


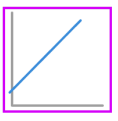
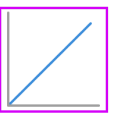


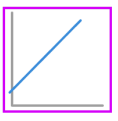
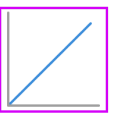
Group C	<p>Identify the graphs representing direct proportion:</p> <p>1) </p> <p>2) </p> <p>3) </p> <p>4) </p> <p>5) </p> <p>6) </p>	<p>1) No</p> <p>2) Yes</p> <p>3) No</p> <p>4) Yes</p> <p>5) No</p> <p>6) No</p>
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## Direct proportion - Answers

	Question	Answer
	Applied Questions	
<b>1)</b>	<b>a)</b> 4 pears cost £2.80 Find the cost of 9 pears.  <b>b)</b> 5 apples cost £2.40 Find the cost of 7 apples.	<b>a)</b> £6.30  <b>b)</b> £3.36
<b>2)</b>	<b>a)</b> 5 packets of seeds weigh 400 grams. Find the weight of 7 packets of seeds.  <b>b)</b> 8 packets of dried fruit weigh 480 grams. Find the weight of 5 packets of dried fruit.	<b>a)</b> 560 grams  <b>b)</b> 300 grams
<b>3)</b>	<b>a)</b> $y$ is directly proportional to $x$ . $y$ is given by the formula $y = 5x$ Find the value of $y$ when $x = 8$ .  <b>b)</b> $c$ is directly proportional to $r$ . $c$ is given by the formula $c = 6r$ Find the value of $c$ when $r = 4.2$ .	<b>a)</b> $5 \times 8 = 40$  <b>b)</b> $6 \times 4.2 = 25.2$
<b>4)</b>	<b>a)</b> $y$ is directly proportional to $x^2$ . $y$ is given by the formula $y = 5x^2$ Find the value of $y$ when $x = 3$ .  <b>b)</b> $a$ is directly proportional to $r^2$ . $a$ is given by the formula $a = 3r^2$ Find the value of $a$ when $r = 7.8$ .	<b>a)</b> $5 \times 3^2 = 45$  <b>b)</b> $3 \times 7.8^2 = 182.52$



## Direct proportion - Mark Scheme

	Question	Answer									
	Exam Questions										
1)	<p>Here are four graphs.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">A</td><td style="text-align: center; padding: 2px;">B</td><td style="text-align: center; padding: 2px;">C</td><td style="text-align: center; padding: 2px;">D</td></tr> <tr> <td style="text-align: center;"></td><td style="text-align: center;"></td><td style="text-align: center;"></td><td style="text-align: center;"></td></tr> </table> <p>State which graph represents direct proportionality.</p>	A	B	C	D					Graph D (1)	(1)
A	B	C	D								
											
2)	<p>500 sheets of paper weigh 2.4 kg. Work out the weight of 60 sheets of paper.</p>	$2.4 \div 500 \times 60$ (1) $= 0.288 \text{ kg}$ (1) <i>accept 288g</i>	(2)								
3)	<p><math>m</math> is directly proportional to <math>p^2</math>.  <math>m</math> is given by the formula  <math>m = 50p^2</math>          Work out the value of <math>m</math> when <math>p = 3</math>.</p>	$50 \times 3^2$ (1) $= 450$ (1)	(2)								
4)	<p>A recipe for vanilla cheesecake needs 240 grams of soft cheese.</p> <p>The lemon cheesecake will have 8 portions.          Soft cheese is sold in 300 gram packets.          The packets cost £1.45 each.          Penny wants to make enough lemon cheesecake for 25 portions.</p> <p>Calculate the cost of soft cheese for Penny to make 25 portions of cheese cake.</p>	<p>The amount of soft cheese needed:  <math>240 \div 8 \times 25</math> (1)</p> <p><math>= 750 \text{ grams}</math> (1)</p> <p>3 packets of soft cheese:  <math>3 \times "1.45"</math> (1)</p> <p>£4.35 (1)</p>	(4)								

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