Inverse proportion - Worksheet

Skill

Group A - Finding the time to complete a job for a different number of workers

Work out:

1) 5 workers take 16 hours to complete a job.
Find the time for 4 workers.

2) 5 workers take 12 hours to complete a job.
Find the time for 4 workers.

3) 5 workers take 10 hours to complete a job.
Find the time for 4 workers.

4) 3 workers take 8 hours to complete a job.
Find the time for 2 workers.

5) 7 workers take 8 hours to complete a job.
Find the time for 2 workers.

6) 9 workers take 8 hours to complete a job.
Find the time for 2 workers.

7) 4 workers take 15 hours to complete a job.
Find the time for 5 workers.

8) 4 workers take 15 hours to complete a job.
Find the time for 6 workers.

9) 4 workers take 15 hours to complete a job.
Find the time for 10 workers.

10) 6 workers take 12 hours to complete a job.
Find the time for 9 workers.

11) 6 workers take 8 hours to complete a job.
Find the time for 9 workers.

12) 6 workers take 5 hours to complete a job.
Find the time for 9 workers.

Group B - Inverse proportion equations

Work out:

1) $y = \frac{12}{x}$. Work out the value of when $x = 2$.

2) $y = \frac{12}{x}$. Work out the value of y when $x = 3$.

3) $y = \frac{12}{x}$. Work out the value of y when $x = 8$.

4) $y = \frac{8}{x}$. Work out the value of y when $x = 2$.

5) $y = \frac{9}{x}$. Work out the value of y when $x = 2$.

6) $y = \frac{15}{x}$. Work out the value of y when $x = 2$.

7) $y = \frac{36}{x}$. Work out the value of y when $x = 3$.

8) $y = \frac{36}{x}$. Work out the value of y when $x = 4$.

9) $y = \frac{36}{x}$. Work out the value of y when $x = 12$.

10) $y = \frac{20}{x}$. Work out the value of y when $x = 10$.

11) $y = \frac{26}{x}$. Work out the value of y when $x = 10$.

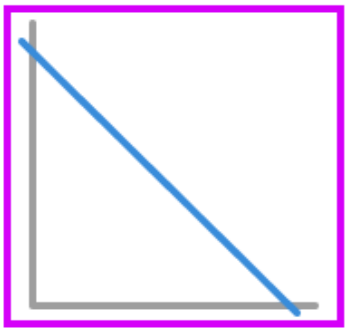
12) $y = \frac{33}{x}$. Work out the value of y when $x = 10$.

Inverse proportion - Worksheet

Group C - Inverse proportion graphs

Identify the graphs representing inverse proportion:

1)



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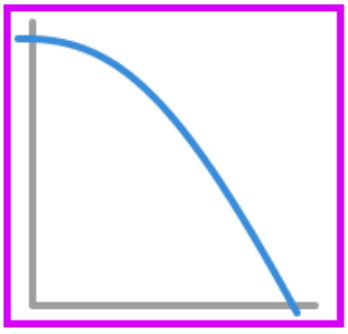

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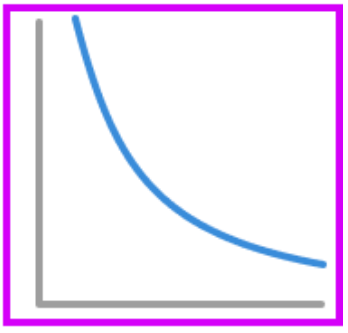

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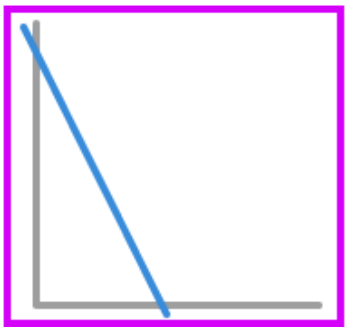

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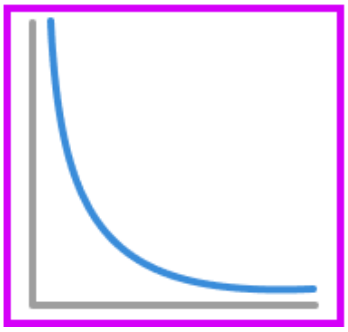

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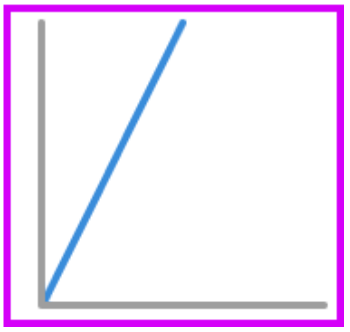


Inverse proportion - Worksheet

Applied

1) **(a)** 7 painters take 10 days to paint a building.
Work out how long it would take 5 painters to paint the building.

(b) 5 painters take 3 days to paint a fence.
Work out how long it would take 6 painters to paint the fence.

2) **(a)** 12 machines take 40 hours to complete a job.
Work out how long it would take 20 machines to complete the same job.

(b) 9 machines take 35 hours to complete a job.
Work out how long it would take 7 machines to complete the same job.

3) **(a)** y is inversely proportional to x.
y is given by the formula $y = \frac{8}{x}$.
Find the value of y when $x = 2$.

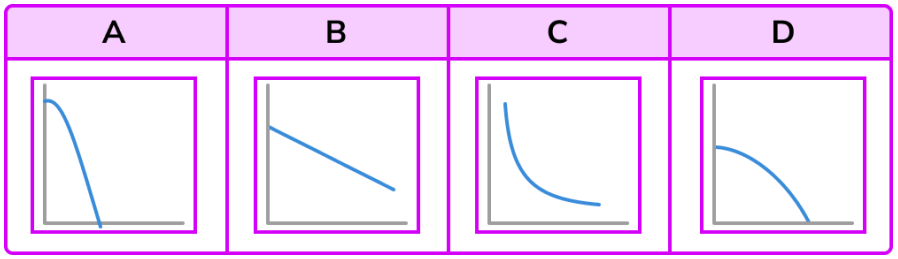
(b) m is inversely proportional to p.
m is given by the formula $m = \frac{248}{p}$.
Find the value of m when $p = 20$.

4) **(a)** y is inversely proportional to x^2.
y is given by the formula $y = \frac{28}{x^2}$.
Find the value of y when $x = 2$.

(b) w is inversely proportional to $\sqrt{t}$ where t is a positive value
w is given by the formula $w = \frac{180}{\sqrt{t}}$.
Find the value of w when $t = 9$.

Inverse proportion - Exam Questions

1) Here are four graphs.



State which graph represents inverse proportionality.

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(1 mark)

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2) It takes 4 painters 9 days to complete a job.
How long would it take 6 painters to complete the same job?

.....days

(2 marks)

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3) y is inversely proportional to x. y is given by the formula $y = \frac{4.8}{x}$.

Work out the value of y when $x = 4$.

.....

(2 marks)

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4) **(a)** 6 machines take 5 days to produce 100 items. Work out how long it would take 10 machines to produce 100 items.

.....days

(2 marks)

(b) Work out how long it would take 15 machines to produce 700 items.

.....days

(2)

(4 marks)

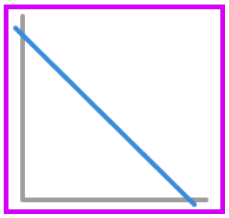
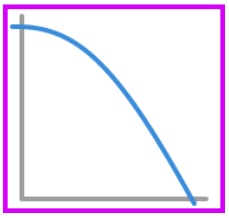
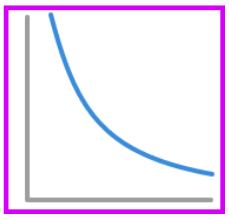
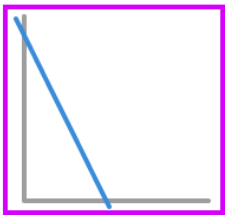
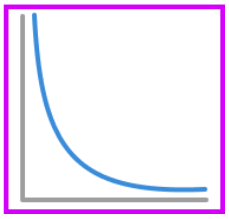
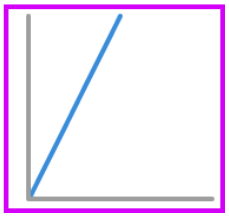
Inverse proportion - Answers

	Question	Answer
	Skill Questions	
Group A	Work out: **1)** 5 workers take 16 hours to complete a job. Find the time for 4 workers. **2)** 5 workers take 12 hours to complete a job. Find the time for 4 workers. **3)** 5 workers take 10 hours to complete a job. Find the time for 4 workers. **4)** 3 workers take 8 hours to complete a job. Find the time for 2 workers. **5)** 7 workers take 8 hours to complete a job. Find the time for 2 workers. **6)** 9 workers take 8 hours to complete a job. Find the time for 2 workers. **7)** 4 workers take 15 hours to complete a job. Find the time for 5 workers. **8)**4 workers take 15 hours to complete a job. Find the time for 6 workers. **9)** 4 workers take 15 hours to complete a job. Find the time for 10 workers. **10)** 6 workers take 12 hours to complete a job. Find the time for 9 workers. **11)** 6 workers take 8 hours to complete a job. Find the time for 9 workers. **12)** 6 workers take 5 hours to complete a job. Find the time for 9 workers.	 **1)** 20 hours **2)** 15 hours **3)** 12.5 hours **4)** 12 hours **5)** 28 hours **6)** 36 hours **7)** 12 hours **8)** 10 hours **9)** 6 hours **10)** 8 hours **11)** 5 hours and 20 mins or 5.33 hours **12)** 3 hours and 20 mins or 3.33 hours

Inverse proportion - Answers

Group B	Work out: **1)** $y = \frac{12}{x}$. Work out the value of y when $x = 2$.	**1)** $y = 6$
	2) $y = \frac{12}{x}$. Work out the value of y when $x = 3$.	**2)** $y = 4$
	3) $y = \frac{12}{x}$. Work out the value of y when $x = 8$.	**3)** $y = 1.5$
	4) $y = \frac{8}{x}$. Work out the value of y when $x = 2$.	**4)** $y = 4$
	5) $y = \frac{9}{x}$. Work out the value of y when $x = 2$.	**5)** $y = 4.5$
	6) $y = \frac{15}{x}$. Work out the value of y when $x = 2$.	**6)** $y = 7.5$
	7) $y = \frac{36}{x}$. Work out the value of y when $x = 3$.	**7)** $y = 12$
	8) $y = \frac{36}{x}$. Work out the value of y when $x = 4$.	**8)** $y = 9$
	9) $y = \frac{36}{x}$. Work out the value of y when $x = 12$.	**9)** $y = 3$
	10) $y = \frac{20}{x}$. Work out the value of y when $x = 10$.	**10)** $y = 2$
	11) $y = \frac{26}{x}$. Work out the value of y when $x = 10$.	**11)** $y = 2.6$
	12) $y = \frac{33}{x}$. Work out the value of y when $x = 10$.	**12)** $y = 3.3$

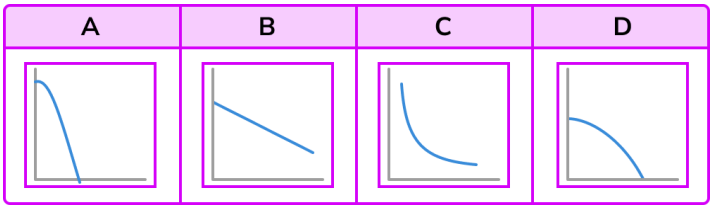
Inverse proportion - Answers

Group C	Identify the graphs representing inverse proportion: **1)**  **2)**  **3)**  **4)**  **5)**  **6)** 	**1)** No **2)** No **3)** Yes **4)** No **5)** Yes **6)** No

Inverse proportion - Answers

	Question	Answer
	Applied Questions	
1)	**a)** 7 painters take 10 days to paint a building. Work out how long it would take 5 painters to paint the building. **b)** 5 painters take 3 days to paint a fence. Work out how long it would take 6 painters to paint the fence.	**a)** 14 days **b)** 2.5 days
2)	**a)** 12 machines take 40 hours to complete a job. Work out how long it would take 20 machines to complete the same job. **b)** 9 machines take 35 hours to complete a job. Work out how long it would take 7 machines to complete the same job.	**a)** 24 hours **b)** 45 hours
3)	**a)** y is inversely proportional to x. y is given by the formula $y = \frac{8}{x}$ Find the value of y when $x = 2$. **b)** m is inversely proportional to p. m is given by the formula $m = \frac{248}{p}$ Find the value of m when $p = 20$.	**a)** $y = 4$ **b)** $m = 12.4$
4)	**a)** y is inversely proportional to x^2. y is given by the formula $y = \frac{28}{x^2}$. Find the value of y when $x = 2$. **b)** w is inversely proportional to $\sqrt{t}$ where t is a positive value is given by the formula $w = \frac{180}{\sqrt{t}}$. Find the value of w when $t = 9$.	**a)** $y = \frac{28}{2^2} = \frac{28}{4} = 7$ **b)** $w = \frac{180}{\sqrt{9}} = \frac{180}{3} = 60$

Inverse proportion - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Here are four graphs.  State which graph represents inverse proportionality.	**(a)** C	**(1)**
2)	It takes 4 painters 9 days to complete a job. How long would it take 6 painters to complete the same job?	$4 \times 9 \div 6$ $6\ days$	**(1)** **(1)**
3)	y is inversely proportional to x. y is given by the formula $y = \frac{4.8}{x}$. Work out the value of y when $x = 4$	$\frac{4.8}{2}$ 1.2	**(1)** **(1)**
4) (a)	6 machines take 5 days to produce 100 items. Work out how long it would take 10 machines to produce 100 items	**(a)** $6 \times 5 \div 10$ 3 days	**(1)** **(1)**
(b)	Work out how long it would take 15 machines to produce 700 items.	**(b)** $6 \times 5 \times 7 \div 8$ 14 days	**(1)** **(1)**