

I can generate equivalent ratios and determine if ratios are equivalent.

Exploring Equivalent Ratios

Trying to determine whether two ratios are equivalent or trying to determine what value will make two ratios equivalent can be a bit tricky. There are 3 methods we can use to determine whether ratios are equivalent.

<u>Multiply/Divide Terms</u>	<u>Cross Products</u>	<u>Reduce Ratio</u>
$3 : 7$ $24 : 56$	$6 : 8$ $9 : 12$	$12 : 30$ $8 : 20$
$3 : 7$ $24 : 56$	$10 : 15$ $8 : 12$	$6 : 10$ $27 : 45$

1. Which ratio is not equivalent to 12:18?

- A. 10:15
- B. 6:9
- C. 6:12
- D. 4:6

2. Which ratio is not equivalent to 63:72?

- A. 42:48
- B. 35:40
- C. 42:54
- D. 56:64

3. Bill bought his son a set of Matchbox cars for Christmas. The ratio of race cars to regular cars in the box was 5 : 7. After a few weeks Bill asked his son if he had lost any of the cars. His son told him that he had not lost any cars and that he had the 49 regular cars and 35 race cars he got in the original collection. Is it possible that Bill's son is correct?

Example

Complete the equivalent ratios.

a. $21 : 24 = 49 : \square$

b. $15 : 21 = \square : 49$

c. $15 : \square = 25 : 35$

Example

Which ratios are equivalent to 30 : 45 ? Drag the ratios to the correct bucket.

14 : 21

100 : 150

3 : 2

6 : 9

35 : 50



Equivalent to 30 : 45



Not Equivalent to 30 : 45

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<u>Multiply/Divide Terms</u>	<u>Cross Products</u>	<u>Reduce Ratio</u>
$\begin{matrix} \times 8 & & \times 8 \\ \swarrow & 3 : 7 & \searrow \\ & 24 : 56 & \end{matrix}$	$\begin{matrix} 6 : 8 \\ 9 : 12 \\ 72 = 72 \end{matrix}$	$\begin{matrix} \div 6 & & \div 6 \\ \swarrow & 12 : 30 & \searrow \\ & 2 : 5 & \end{matrix}$
$\begin{matrix} \div 8 & & \div 8 \\ \swarrow & 3 : 7 & \searrow \\ & 24 : 56 & \end{matrix}$	$\begin{matrix} 10 : 15 \\ 8 : 12 \\ 120 = 120 \end{matrix}$	$\begin{matrix} \div 4 & & \div 4 \\ \swarrow & 8 : 20 & \searrow \\ & 2 : 5 & \end{matrix}$ $\begin{matrix} \div 2 & & \div 2 \\ \swarrow & 6 : 10 & \searrow \\ & 3 : 5 & \end{matrix}$ $\begin{matrix} \div 9 & & \div 9 \\ \swarrow & 27 : 45 & \searrow \\ & 3 : 5 & \end{matrix}$

1. Which ratio is not equivalent to 12:18?

- A. 10:15
- B. 6:9
- C. 6:12
- D. 4:6

Using Cross Products

A) $\begin{matrix} 12 \cdot 15 \\ 10 \cdot 18 \\ 180 = 180 \end{matrix}$

B) $\begin{matrix} 12 \cdot 9 \\ 6 \cdot 18 \\ 108 = 108 \end{matrix}$

C) $\begin{matrix} 12 \cdot 12 \\ 6 \cdot 18 \\ 108 \neq 144 \end{matrix}$

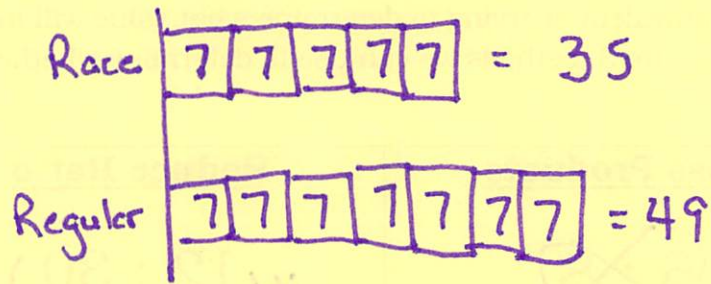
D) $\begin{matrix} 2 \cdot 6 \\ 4 \cdot 6 \\ 72 = 72 \end{matrix}$

2. Which ratio is not equivalent to 63:72?

- A. 42:48 $\rightarrow 7:8$
- B. 35:40 $\rightarrow 7:8$
- C. 42:54 $\rightarrow 7:9$
- D. 56:64 $\rightarrow 7:8$

reduce
7:8

3. Bill bought his son a set of Matchbox cars for Christmas. The ratio of race cars to regular cars in the box was 5 : 7. After a few weeks Bill asked his son if he had lost any of the cars. His son told him that he had not lost any cars and that he had the 49 regular cars and 35 race cars he got in the original collection. Is it possible that Bill's son is correct?



Yes it's possible!
Ratios are equivalent.

Example

Complete the equivalent ratios.

a. $21 : 24 = 49 : \boxed{56}$

$\times 7 \left(\begin{array}{l} 7:8 \\ \downarrow \\ 49: \end{array} \right) \times 7$

b. $15 : 21 = \boxed{35} : 49$

$\times 7 \left(\begin{array}{l} 5:7 \\ \downarrow \\ \end{array} \right) \times 7$

c. $15 : \boxed{21} = 25 : 35$

$\times 3 \left(\begin{array}{l} 5:7 \\ \downarrow \\ 15: \end{array} \right) \times 3$

Example

Which ratios are equivalent to 30 : 45 ? Drag the ratios to the correct bucket.

2:3

14:21

100:150

3:2

6:9

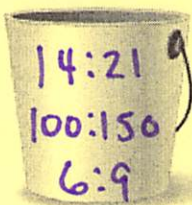
35:50

2:3

2:3

2:3

7:10



Equivalent to 30:45



Not Equivalent to 30:45