

5.2 Proportions

A proportion is an equation stating that two ratios are equivalent.

Ex $\frac{2 \times 2}{3 \times 2} = \frac{4}{6}$ Is read: 2 is to 3 as 4 is to 6

① Determine whether the Ratios form a Proportion

$\frac{6}{4}$ and $\frac{8}{12}$ $\frac{3}{2} \neq \frac{2}{3}$ Not a proportion

② Determine whether the 2 quantities are proportional. Are X and Y proportional?

X	Y
$\frac{1}{2}$	3
1	6
$\frac{2}{3}$	9
2	12

* Compare the ratio x to y in Simplest form

$$\left. \begin{array}{l} \frac{1 \times 2}{2 \times 1} = \frac{1}{1} \\ \frac{3 \times 2}{3 \times 2} = \frac{6}{6} \end{array} \right\} \frac{3/2}{9} = \frac{1}{6} \checkmark$$

$$\frac{2 \times 2}{12 \times 2} = \frac{1}{6} \checkmark$$

So, X and Y are proportional

1) $\frac{1 \times 5}{2 \times 5} = \frac{5}{10}$ yes 2) $\frac{4 \times 4}{6 \times 4} = \frac{18}{24}$ NO! 3) $\frac{10}{3} = \frac{5}{6}$ NO

4) $\frac{2 \times 5 \times 3}{2 \times 4 \times 3} = \frac{15}{12}$ yes

5) X $\frac{1}{12}$ $\frac{2}{24}$ $\frac{4}{48}$ $\frac{6}{72}$ yes

5.2

Cross products

The cross products of a proportion are equal.
(ex)

$$\frac{2}{3} = \frac{4}{6}$$

(The 2 and 6 are circled, and the 3 and 4 are circled, with lines connecting 2 to 4 and 3 to 6, illustrating the cross products.)

1) $\frac{48}{9} = \frac{16}{3}$ yes

2) $\frac{18}{27} = \frac{33}{44}$ No

3) $\frac{12}{10} = \frac{14}{12}$ No

4)

X	2	4	6	8
Y	5	10	15	20

 yes

5) 120 units made in 5 days; 88 units made in 4 days.

$\frac{120}{5} = \frac{88}{4}$ No

Pg. 174 (5-8) (13) (15-17)