

Lesson 7-0: Bridge to Unit 7

RATIOS

- A ratio compares two numbers by division, ex: 1/2, 3:5, 8 to 3
- An extended ratio compares several numbers, ex: 8:3:2
- If you know 2 numbers are in a certain ratio, say 4:2, you can represent the 2 numbers as 2x and 4x

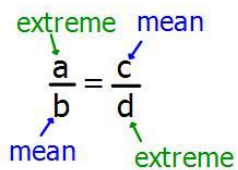
Try These:

EX 1) The ratio of angle measures in a triangle is 1:6:13. What is the measure of the largest angle?

EX 2) The ratios of the side lengths of a triangle is 4:7:5, and its perimeter is 96 cm. What is the length of the shortest side?

PROPORTIONS

A proportion states that two ratios are equal. The product of the means equals the product of the extremes.



Cross Products Property

In a proportion, if $\frac{a}{b} = \frac{c}{d}$ and b and $d \neq 0$, then $ad = bc$.

$ad = bc$

Is each of the following a true proportion?

A) $\frac{2}{3} = \frac{6}{8}$

B) $\frac{6}{4} = \frac{12}{8}$

Solve the following Proportions:

EX3) $\frac{2y}{9} = \frac{8}{4y}$

EX4) $\frac{z-4}{5} = \frac{20}{z-4}$

EX 5) $\frac{x-7}{4} = \frac{11}{2x+4}$

Radical Review:

List the perfect squares: 4, 9, _____, _____, _____, _____, _____, _____, _____, _____, _____ etc...

Simplifying Square Root Radicals

If a square root radical such as $\sqrt{50}$ is not a perfect square (ex. $\sqrt{36}$), there is a way to simplify it.

- 1) Rewrite the radical as the product of factors such that one is a perfect square.
- 2) Take the square root and write it as the coefficient of the radical.
- 3) Remember to multiply any coefficients.

Rule: $\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$ and $\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$

Example: A) $\sqrt{50} = \sqrt{25} \sqrt{2} = 5\sqrt{2}$ B) $5\sqrt{72} = 5\sqrt{36} \sqrt{2} = 5 \cdot 6\sqrt{2} = 30\sqrt{2}$

Express in simplest radical form:

6. $\sqrt{112}$

7. $\sqrt{32}$

8. $3\sqrt{50}$

9. $7\sqrt{242}$

Dividing Radicals

- 1) Simplify the radical expression(s) by taking the square roots of any perfect squares and multiplying coefficients if necessary.
- 2) Cancel common factors

Example: $8\sqrt{48} \div 4\sqrt{3} = \frac{8\sqrt{48}}{4\sqrt{3}} = \frac{8\sqrt{16}\sqrt{3}}{4\sqrt{3}} = \frac{8 \cdot 4\sqrt{3}}{4\sqrt{3}} = \frac{32\sqrt{3}}{4\sqrt{3}} = 8$

Simplify the following:

10. $\frac{8\sqrt{2}}{40\sqrt{2}}$

11. $\frac{\sqrt{144}}{\sqrt{64}}$

12. $\frac{\sqrt{300}}{30\sqrt{108}}$

13. $\frac{7\sqrt{162}}{18\sqrt{98}}$