

Ratios & Proportions

(part 2)

SOH-CAH-TOA

$\sin S = \frac{3}{5}$
 $\frac{3}{4} \tan R$

$X \sin 32^\circ = \frac{10}{X} \cdot X$
 $\frac{X \sin 32^\circ}{\sin 32^\circ} = \frac{10}{\sin 32^\circ}$
 $X = 19.87$

title

Jan 5-8:21 AM

Additional Properties of Proportions

If two ratios are equal, then their reciprocals are also equal.

Extremes $a \cdot d$
means $b \cdot c$

$$\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{b}{a} = \frac{d}{c}$$

Interchange the means of a proportion, and you form another true proportion.

$$\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{a}{c} = \frac{b}{d}$$

Add the value of each ratio's denominator to its numerator, and you form another true proportion.

$$\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{a+b}{b} = \frac{c+d}{d}$$

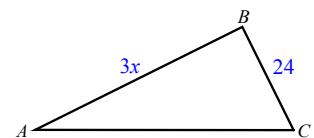
The ratio of two side lengths of $\triangle ABC$ is given. Solve for x .

$AB:BC$ is 2:1

$$\frac{AB}{BC} = \frac{2}{1} = \frac{3x}{24}$$

$$\frac{3x}{3} = \frac{48}{3}$$

$$x = 16$$



properties

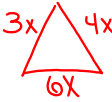
examples

The measures of the three interior angles of a triangle are in the extended ratio of 3 : 5 : 7. Find the measure of each angle of the triangle.

$36^\circ + 60^\circ + 84^\circ$
 $3x + 5x + 7x = 180$
 $15x = 180$
 $x = 12$

examples

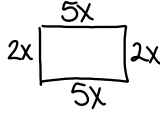
The lengths of the three sides of a triangle are in the extended ratio of 3 : 4 : 6, and the perimeter of the triangle is 104 feet. Find the length of each side of the triangle.


 $3x + 4x + 6x = 104$
 $13x = 104$
 $x = 8$

24, 32, 48

examples

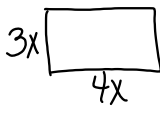
The perimeter of a rectangle is 56 feet. The ratio of the width to the length is 2 : 5. Find the length and width.


 $2x + 5x + 2x + 5x = 56$
 $14x = 56$
 $x = 4$

width = $2(4) = 8$
 length = $5(4) = 20$

examples

The area of a rectangle is 432 square inches. The ratio of the width to the length is 3 : 4. Find the length and width. $A = l \cdot w$


 $3x \cdot 4x = 432$
 $12x^2 = 432$
 $x^2 = 36$
 $x = 6$

width $3(6) = 18$ in
 length $4(6) = 24$ in

examples

Conclusion

1. What are some of the properties of ratios and proportions? $\frac{a}{b} = \frac{c}{d}$ then $\frac{b}{a} = \frac{d}{c}$ $\frac{a}{b} = \frac{c}{d}$ then $\frac{a}{c} = \frac{b}{d}$
 $\frac{a}{b} = \frac{c}{d}$ then $\frac{a+b}{b} = \frac{c+d}{d}$
2. How do you set up the angles of a triangle with ratio 5 : 6 : 9? $5x + 6x + 9x = 180$
3. What else can you do if you have the ratio of the sides of a figure?
4. Questions??

Dec 10-3:00 PM

Assignment**Ratio and Proportions
Day 2 Wkst**

Dec 10-3:02 PM