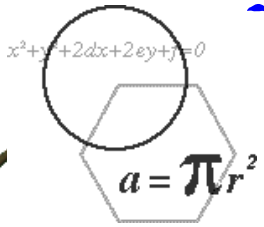
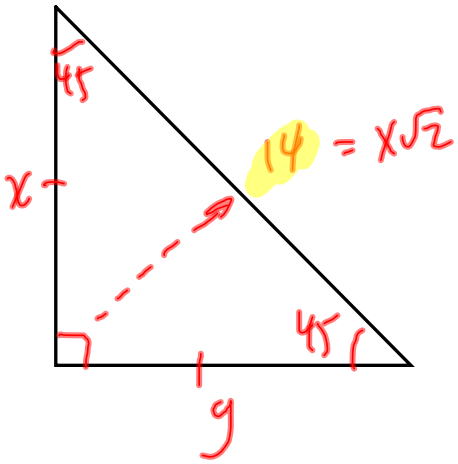


Table groups have moved!

Front

Matt Mckenzie Caitlin Karleigh	Ryan Ben Jonathan Parker
Faith Jaquelyn Prinn Sydney	Emma Zachary Christian Judy

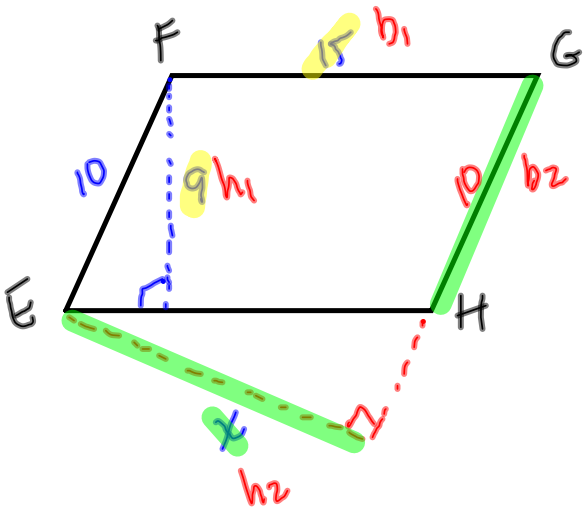


$x = y$

$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{14}{\sqrt{2}}$

$x = \frac{14}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= \frac{14\sqrt{2}}{2} = 7\sqrt{2}$



$A = bh$

$A = b_1 h_1$

$= 15 \cdot 9 = 135$

$A = b_2 h_2$

$= 10x$

$10x = 135$

$x = 13.5$

$\sqrt{164}$

$\sqrt{164} = \sqrt{4} \cdot \sqrt{41}$

$= 2\sqrt{41}$

$164 \div 2 = 82$

~~81~~

~~64~~

~~49~~

~~36~~

~~25~~

~~16~~

~~9~~

4

Definition: Ratio

A comparison btwn 2 values or sets of things.

Often helpful to make sure both use same units.

3 ways to write a Ratio...

Using "to": 5 is to 7

Using colon: five is to seven
$5 : 7$

Fraction: $\frac{5}{7}$ five is to seven

What is the Ratio of Squares to Circles?

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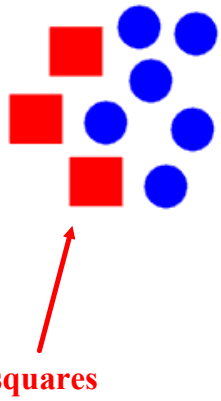
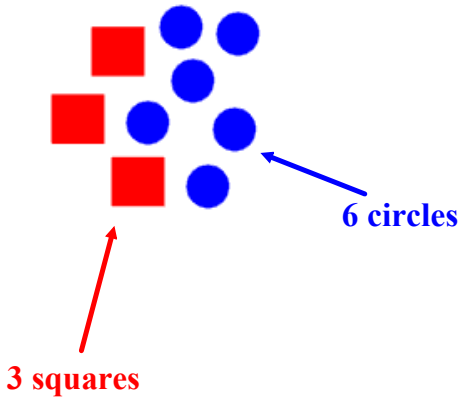
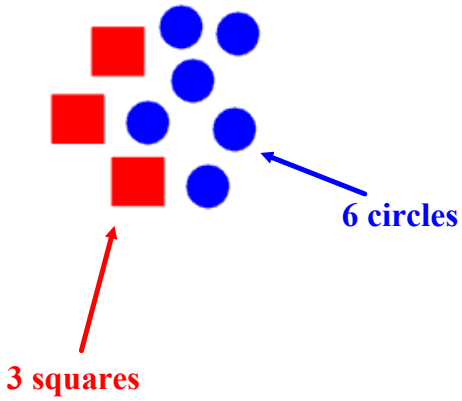


3 squares

What is the Ratio of Squares to Circles?

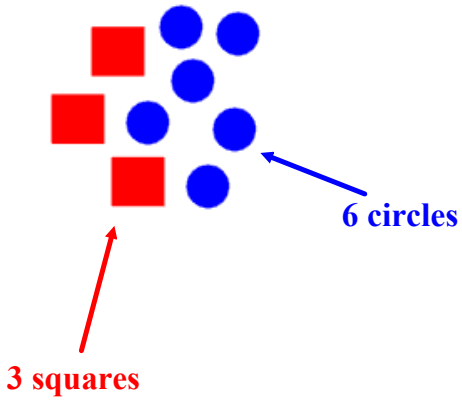


What is the Ratio of Squares to Circles?



3 squares to 6 circles

What is the Ratio of Squares to Circles?

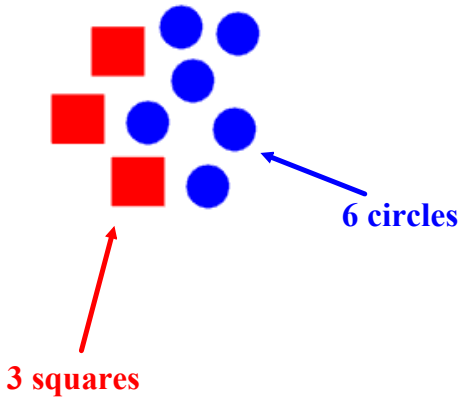


3 squares to 6 circles

...or...

3:6

What is the Ratio of Squares to Circles?

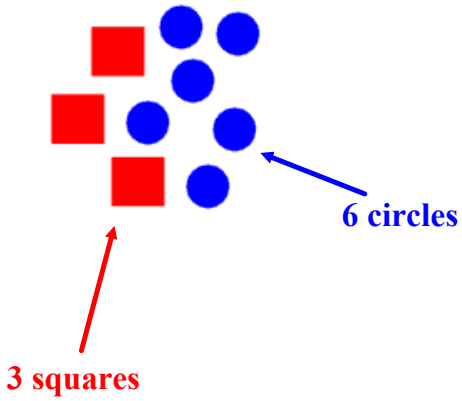


3 squares to 6 circles

...or...

3:6 ⟶ 1:2

What is the Ratio of Squares to Circles?



3 squares to 6 circles

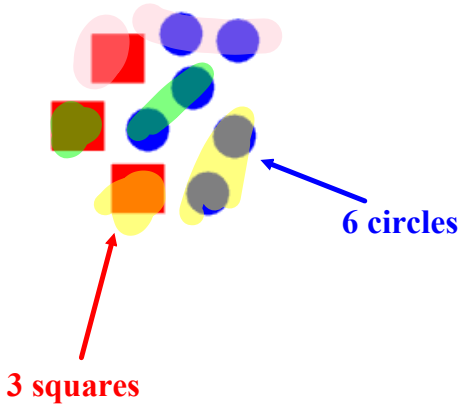
...or...

3:6 ⟶ 1:2

...or...

$\frac{3}{6}$

What is the Ratio of Squares to Circles?



3 squares to 6 circles

...or...

$3:6 \longrightarrow 1:2$

...or...

$\frac{3}{6} \longrightarrow \frac{1}{2}$

For every 1 square there are 2 circles

Ratio Example

A scale model of a car is 4in long.

The actual car is 15ft long. = 15.12in = 180in

What's the ratio of the length of the model car to the real?

Use the colon ratio notation...

4in to 180in

A 4:15

B 15:4

C 1:45

D 45:1

1

Definition: Proportion

A statement that 2 ratios are equal.

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Example:

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Example:

$$\frac{a}{b} = \frac{x}{y}$$

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Definition: Proportion

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Example:

$\frac{a}{b} = \frac{x}{y}$ or $a:b = x:y$

a is to b as

Definition: Proportion

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Example:

$$\frac{a}{b} = \frac{x}{y} \quad \text{or} \quad a:b = x:y$$

a is to b as x is to y

Definition: Proportion

A statement that 2 ratios are equal.

Example:

$\frac{a}{b} = \frac{x}{y}$ or $a:b = x:y$

a is to b as x is to y

$\frac{3}{4} = \frac{9}{12}$

$\frac{3}{4} \overset{\times 5}{=} \frac{15}{x = 20}$ $\times ?$

Properties of Proportions

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

Then

Properties of Proportions

If $\frac{a}{b} = \frac{c}{d}$?

Then 1) $ad = bc$ (cross product)

multiply

$$\frac{a \cdot d \cancel{b}}{\cancel{b}} = \frac{c \cdot \cancel{d} \cdot b}{\cancel{d}}$$

$$ad = cb$$

Properties of Proportions

If $\frac{a}{b} = \frac{c}{d}$?

Then 1) $ad = bc$ (cross product)

2) $\frac{b}{a} = \frac{d}{c}$

$\frac{a}{b} \times \frac{c}{d}$

$\frac{ad}{ac} = \frac{bc}{ac}$

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

Properties of Proportions

If $\frac{a}{b} = \frac{c}{d}$?

Then 1) $ad = bc$ (cross product)

2) $\frac{b}{a} = \frac{d}{c}$

3) $\frac{a}{c} = \frac{b}{d}$

$\frac{a}{b} \times \frac{c}{d}$

$\frac{ad}{bd} = \frac{bc}{bd}$

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

or

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

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

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

Properties of Proportions

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

Then 1) $ad = bc$ (cross product)

2) $\frac{b}{a} = \frac{d}{c}$

3) $\frac{a}{c} = \frac{b}{d}$

4) $\frac{a+b}{b} = \frac{c+d}{d}$

$\frac{2}{3} \xrightarrow{+\frac{3}{3}} \frac{5}{3}$

$\frac{2}{3} + \frac{3}{3} = \frac{2+3}{3}$

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

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

Properties of Proportions

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

Then 1) $ad = bc$ (cross product)

2) $\frac{b}{a} = \frac{d}{c}$ (Flip both)

3) $\frac{a}{c} = \frac{b}{d}$ (Swap 1 numerator & other denom)

4) $\frac{a+b}{b} = \frac{c+d}{d}$ (add denom to numerator for eq)

Proportion Example

If $\frac{a}{4} = \frac{12}{b}$ Then $\frac{b}{12} = ?$

Flipped ... use 2nd property

a) $\frac{a}{4}$

b) $\frac{a+4}{4}$

c) $\frac{4}{a}$

d) $\frac{a}{b}$

2

A

B

C

D

Proportion Example

Solve for n:

cross multiply

$$\frac{2}{5} = \frac{n}{35}$$

$$\frac{70}{5} = \frac{5n}{5}$$

$$14 = n$$

3

Proportion Example

Solve for x:

cross multiply!

$$\frac{x+1}{3} = \frac{x}{2}$$

$3x = 2x + 2$

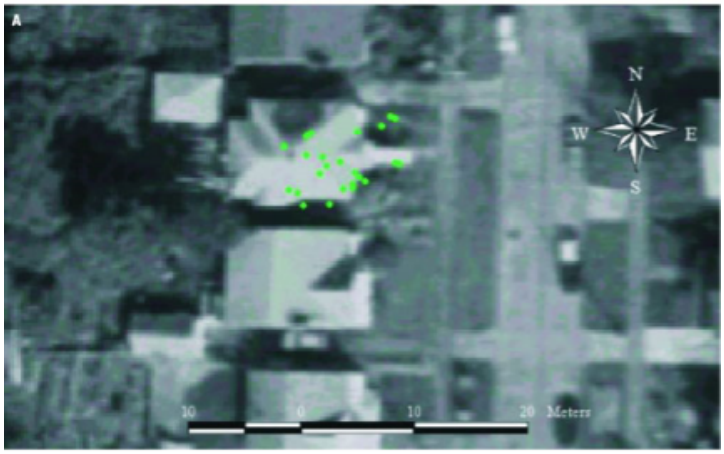
$-2x \quad -2x$

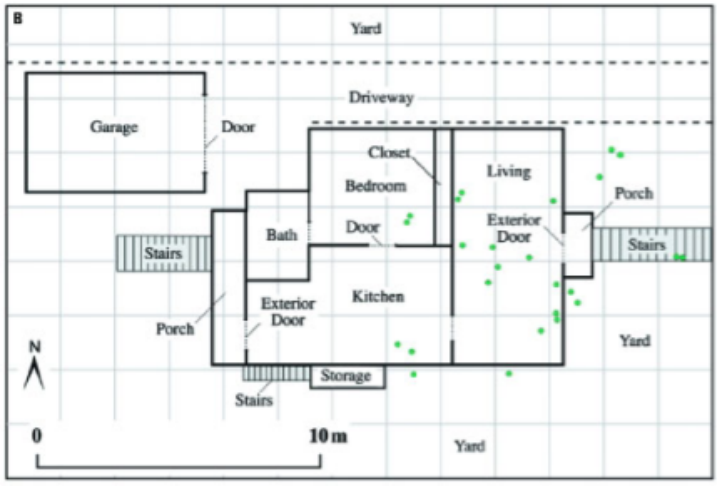
$1x = 2$

$x = 2$

Caution

4


A
N
W
E
S
10
0
10
20 Meters


B
Yard
Driveway
Garage
Door
Closet
Living
Bedroom
Porch
Bath
Door
Exterior
Door
Stairs
Stairs
Kitchen
Exterior
Door
Porch
N
Yard
Storage
Stairs
0
10 m
Yard

Scale Drawing

A drawing that represents a real object drawn with the same proportions.

The scale of the drawing is the ratio of the size of the drawing to the actual size of the object.

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The scale of the drawing is the ratio of the size of the drawing to the actual size of the object.

Scale Drawing Example

1) Two cities are $3\frac{1}{2}$" apart on a map w/scale 1" = 50 mi. Find the actual distance.

every inch is 50 miles

3.5 inches = ? miles ?

$(3.5)(50) = 175$

175 miles

1

2 length?

Scale Drawing Example

The length of a stadium is 100yds & its width is 75yds. If 1 inch represent 25 yards, what are the dimensions of the stadium drawn on the sheet of paper (in inches)?

2) Length = ? $\frac{100}{25} = 4''$

1" : 25 yds

3) Width = ? $\frac{75}{25} = 1''$

3 width?

Quadratic Equations Review

$ax^2 + bx + c = 0, a \neq 0$

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$ax^2 + bx + c = 0, a \neq 0$

standard form

Quadratic Equations Review

$ax^2 + bx + c = 0,\ a \neq 0$

standard form

all variables on one side

Quadratic Equations Review

$ax^2 + bx + c = 0,\ a \neq 0$

standard form

all variables on one side
set equal to zero

Quadratic Equations Review

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$3x^2 - 7x + 12 = 0$

Quadratic Equations Review

$ax^2 + bx + c = 0,\ a \neq 0$

standard form

all variables on one side
set equal to zero

$3x^2 - 7x + 12 = 0$

$-2x^2 + 16x - 3 = 0$

Quadratic Equations Review

$ax^2 + bx + c = 0,\ a \neq 0$

standard form

all variables on one side
set equal to zero

$3x^2 - 7x + 12 = 0$

a =
b =
c =

$-2x^2 + 16x - 3 = 0$

a =
b =
c =

Quadratic Equations Review

$ax^2 + bx + c = 0,\ a \neq 0$

standard form

all variables on one side
set equal to zero

$3x^2 - 7x + 12 = 0$

$a = 3$
$b = -7$
$c = 12$

$-2x^2 + 16x - 3 = 0$

$a = -2$
$b = 16$
$c = -3$

Quadratic Formula Review

To solve $ax^2 + bx + c = 0$ for x use

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Quadratic Formula Review

To solve $ax^2 + bx + c = 0$ for x use

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Equation *MUST* be in standard form!

Quadratic Formula Example

Solve $7x^2 + 6x - 1 = 0$

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1) Write the formula:

Quadratic Formula Example

Solve $7x^2 + 6x - 1 = 0$

1) Write the formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Quadratic Formula Example

Solve $7x^2 + 6x - 1 = 0$

1) Write the formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

2) Identify a, b, & c:

Quadratic Formula Example

Solve $7x^2 + 6x - 1 = 0$

1) Write the formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

2) Identify a, b, & c:

$a = 7$
$b = 6$
$c = -1$

Must actually, literally do this on the test for every quadratic problem! I will take it off if you don't!!!

Quadratic Formula Example

Solve $7x^2 + 6x - 1 = 0$

1) Write the formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

2) Identify a, b, & c:

$a = 7$

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3) Plug in the values & solve.

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4) Use parentheses!!!

Quadratic Formula Example

Solve $7x^2 + 6x - 1 = 0$

1) Write the formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

2) Identify a, b, & c:

a = 7
b = 6
c = -1

3) Plug in the values & solve.

4) Use parentheses!!!

5) MUST BE IN STANDARD FORM!!!

$$x = \frac{-(6) \pm \sqrt{(6)^2 - 4(7)(-1)}}{2(7)}$$

$$= \frac{-6 \pm \sqrt{36 + 28}}{14}$$

$$= \frac{-6 \pm \sqrt{64}}{14} = \frac{-6 \pm 8}{14}$$

(+) $\dfrac{-6+8}{14} = \dfrac{2}{14} = \dfrac{1}{7}$

(−) $\dfrac{-6-8}{14} = \dfrac{-14}{14} = -1$

simplify

$x = \frac{1}{7}, -1$

Quadratic Formula Example

Solve: $-3x^2 - 5x + 5 = 4$

*NOT IN STD FORM! *

$-3x^2 - 5x + 1 = 0$ (a, b, c)

$a = -3$

$b = -5$

$c = 1$

WRITE QUAD FORMULA!

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(-3)(1)}}{2(-3)}$$

use parens to keep track of negatives!

$$= \frac{5 \pm \sqrt{25 + 12}}{-6}$$

$$= \frac{5 \pm \sqrt{37}}{-6}$$

(+) $\frac{5+\sqrt{37}}{-6}$ can't simplify either so we're good

(−) $\frac{5-\sqrt{37}}{-6}$

$\Rightarrow x = \frac{5 \pm \sqrt{37}}{-6}$ can write this way because can't simplify any further

L8.1 HW Assignment

Pg 418 #1-21, 26-33, 35-43, 45-47, 59-66

Pg 422 #1-9