

What's Going On?

Checking In

Quick Recap

Minds on

Letters vs. numbers

Action!

What's it all for?

Consolidation

Practice it!

Learning Goal - I will be able to rearrange formulas!

Review from last week:
Solve for x.

$$\begin{aligned} \text{a) } 4x &= -24 \\ \frac{4x}{4} &= \frac{-24}{4} \\ x &= -6 \end{aligned}$$

$$\begin{aligned} \text{b) } -3v + 6 &= -9 \\ \frac{-3v + 6}{-3} &= \frac{-9}{-3} \\ \frac{-3v}{-3} + \frac{6}{-3} &= -3 \\ -v + 2 &= -3 \end{aligned}$$

$$\begin{aligned} \text{c) } 7 - 5m &= -2 - 2m \\ +2m & \quad +2m \end{aligned}$$

$$+7 - 3m = -2$$

$$-3m + 7 = -2$$

$$\frac{-3m}{-3} = \frac{-9}{-3}$$

$$m = 3$$

Review from yesterday:

How do we get rid of fractions?

$$\frac{x-3}{3} = \frac{x-5}{2}$$

LCM: 6

$$6 \cdot \left(\frac{x-3}{3} \right) = \left(\frac{x-5}{2} \right) \cdot 6$$

$$2 () = () \cdot 3$$

Review from yesterday:

Solve for x.

$$\frac{x-3}{5} = \frac{2(x+4)}{3}$$

(5) (3) LCM: 15

$$\frac{3}{3} \times \left(\frac{x-3}{5} \right) = \left(\frac{2(x+4)}{3} \right) \times \frac{5}{5}$$

$$3(x-3) = 2(x+4)(5)$$

$$3x - 9 = (2x + 8)(5)$$

$$3x - 9 = 5(2x + 8)$$

$$3x - 9 = 10x + 40$$

$$-10x$$

$$-10x$$

$$-7$$

$$-7x - 9 = +40$$

$$+9 \quad +9$$

$$\frac{-7x}{-7} = \frac{49}{-7}$$

$$x = -7$$

$$\frac{x-3}{4} = \frac{4x+7}{7}$$

LCM: $\frac{\quad}{28}$

$$28 \left(\frac{x-3}{4} \right) = \left(\frac{4x+7}{7} \right) 28$$

$28 \div 4 = 7$
 $28 \div 7$

$$7(x-3)$$

Minds on**Letters vs. Numbers**

The equation for speed is:

$$\text{speed} = \frac{\text{distance}}{\text{time}} \quad s = \frac{d}{t}$$

Determine a general equation for distance.

Determine a general equation for time.

Minds on

Letters vs. Numbers

The equation for speed is:

$$\text{speed} = \frac{\text{distance}}{\text{time}} \quad s = \frac{d}{t}$$

What do you measure speed in when driving?

km/h

What about distance?

km

What about time?

h.

Minds on

Letters vs. Numbers

The equation for speed is:

$$\text{speed} = \frac{\text{distance}}{\text{time}} \quad s = \frac{d}{t}$$

Determine a general equation for distance.

Important variable: d .

$$s = \frac{d}{t} \longrightarrow \frac{d}{t} = s$$

60 km/h. 2 h.

$$\underline{2 \times 60 = 120.}$$

$$t \times \frac{d}{t} = s \times t$$

Minds on**Letters vs. Numbers**

The equation for speed is:

$$\text{speed} = \frac{\text{distance}}{\text{time}} \quad s = \frac{d}{t}$$

Determine a general equation for time.

$$s = \frac{d}{t} \implies t =$$
$$\frac{t \times s = d.}{s \quad s}$$
$$t = \frac{d}{s}$$

Minds on

Rearrange it!

The area of a square is represented by the formula:

$A = s^2$ where s is the side length

$s = \underline{\hspace{2cm}}$

Rearrange the formula to solve for s .

$$\begin{array}{l} A = s^2 \\ \sqrt{14} = \sqrt{s^2} \end{array} \rightarrow \begin{array}{l} \sqrt{A} = \sqrt{s^2} \\ \downarrow \\ s \\ \sqrt{A} = s. \end{array}$$

Minds on

Rearrange it!

The equation of a line is represented by the formula:

$$y = mx + b$$

1. Rearrange the formula to solve m .
2. Rearrange the formula to solve x .
3. Rearrange the formula to solve b .

Minds on

The area of a circle is:

$$A = \pi r^2, \text{ where } r \text{ is the radius}$$

Suggest a rearrangement that would let you solve for r .

Action!

What's all this algebra for, anyway?

The Weldon photography class has decided to go pro!

Dan, one of the photography students, is shooting a wedding. He makes \$30 an hour, but the bride and groom promise him a \$5 bonus for every "keeper" photo he takes:

a) How much will Dan make if he works for 3 hours and takes 31 "keepers"?

$$\begin{array}{l}
 \text{3 hours, \$30 an hour} \quad 3 \times \$30 = \$90 \\
 \text{31 keepers, \$5 per keeper} \quad \$31 \times 5 = \frac{\$155}{\$245} \\
 \text{245}
 \end{array}$$

\therefore Dan makes \$245.

b) Write an expression that describes how much Dan makes at his new job.

let x be Dan's earnings.

$$x = \underline{30}h + \underline{5}k,$$

where h is the # of hours that Dan works

and k is the # of keeper photos he takes.

Action!

What's all this algebra for, anyway?

Example:

Louis gets a job washing dishes at his dad's restaurant. His sister Jenn gets a job as a manager. Jenn earns twice as much as Louis, per week. Their dad, Mr. Smith, is the owner - he makes \$200 per week more than Jenn.

a) Write an equation to represent the family's total weekly earnings, E.

$$E = L + J + S$$

let L be Louis' \$

let J be Jenn's \$

let S be Mr Smith's \$

$$\begin{aligned} E &= L + 2L + (J + 200) \\ &= L + 2L + (2L + 200) \\ &= 5L + 200 \end{aligned}$$

$$S = J + 200$$

$$J = 2L$$

b) If the total family earnings are \$1450 each week, how much does each family member earn per week?

$$\$1450 = E$$

\$250

$$\$1450 = 5L + 200$$

$$\begin{array}{r} -200 \qquad -200 \\ \hline 1250 = 5L \end{array}$$

$$1250 = 5L$$

$$L = 250$$

Remember $J = 2L$

$$J = 2 \times 250$$

$$= 500$$

$$\begin{aligned} S &= J + 200 \\ &= 700 \end{aligned}$$

Action!**What's all this algebra for, anyway?**

Example 2: Ms O'Brien quits her job at the polynomial factory and goes to work at a ballpark, selling peanuts. She gets paid \$6/h plus a \$0.50 commission for every bag of peanuts (p) that she sells.

a) Write an equation to represent Ms O'Brien's total earnings, E . $E =$

b) How much does Ms O'Brien earn if she sells 42 bags of peanuts during a 4 hour shift?

c) Rearrange your equation from part (a) to isolate p .

d) Ms O'Brien has decided to buy a \$100 coffee maker. She's working a 7-hour shift. How many bags of peanuts must she sell to earn \$100 in 7 hours?

$$\$100 = \underline{\quad} h + \underline{\quad} p.$$

Consolidation

Write an expression for:

- a) three times "some number" $3x$
- b) four more than "some number"
- c) half of "some number"
- d) five less than double "some number"

Consolidation

Practice it!

Using letters in equations:
pg 215 #1, 2, 6, 8

Modelling situations:
pg 226 #2,
pg 227 #6, 9, 10

Unit test Thurs.

