Download Handout #1 From Website & Name It:
6.1LastNameSolvingEquations.pdf

Learning Goals:

By the end of this lesson, students will feel comfortable solving *one-step linear equations* and apply their knowledge to situations involving linear relationships.

CREATE NEW GOOGLE DRIVE FOLDER:
Unit 6 - Multiple Representations of Linear Relations

Mind Buster:
Concept Circles

How Was the Test?

Unit 6 - Multiple Representations
Day 1: Solving Equations

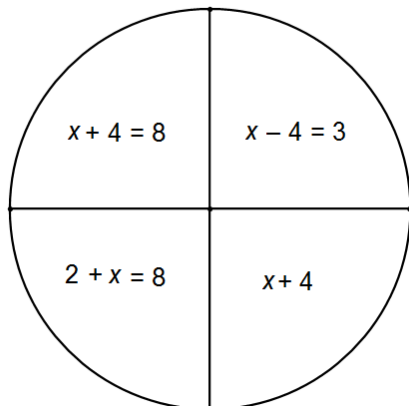*Bring It All Together:*
Solve one-step equations on your own

6.1: Concept Circles – Equations

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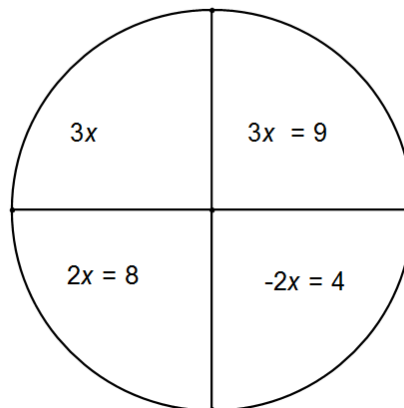ROOM: 2481632
Dashboard

Menu

MIND BUSTER   **WWW.TAPINTOTEENMINDS.COM**

1. Draw an "X" through the example that does not belong. Justify your answer.

a)

$x + 4 = 8$	$x - 4 = 3$
$2 + x = 8$	$x + 4$

b)

$3x$	$3x = 9$
$2x = 8$	$-2x = 4$

c)

$3x - 3 = 3$	$4x - 2$
$2x - 1 = 5$	$-2x = 4$

d)

$y = 3x + 1$	$C = 10t + 1$
$2y + 3x$	$P = 2l + 2w$

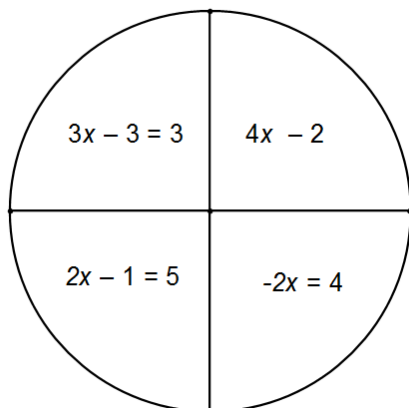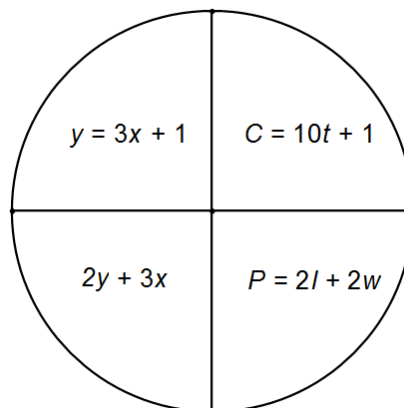**2.** Answer True (T) or False (F). Be prepared to justify your answer.

a) Every equation has exactly two sides. _____

b) Every equation has one equal sign.
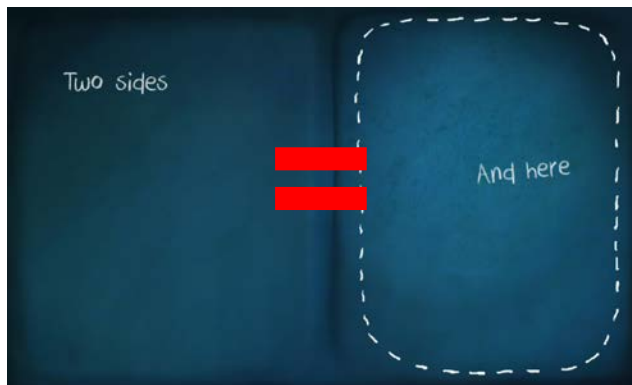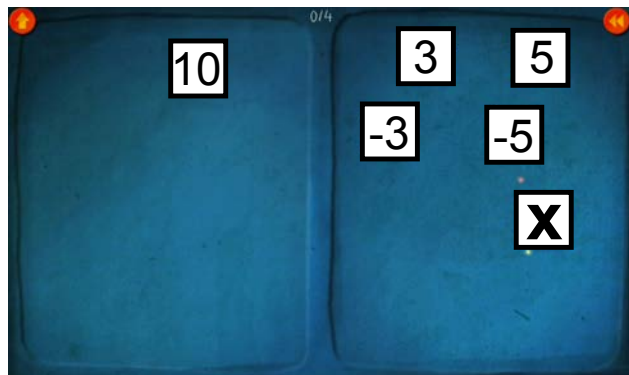
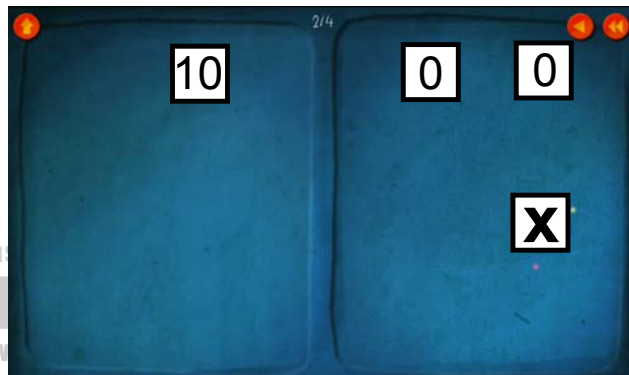c) Every equation has one variable. _____

When playing the game, we are actually *solving equations!*

The BOX represents a variable and animals represent numbers.

Note that the tornadoes represent the number "zero"
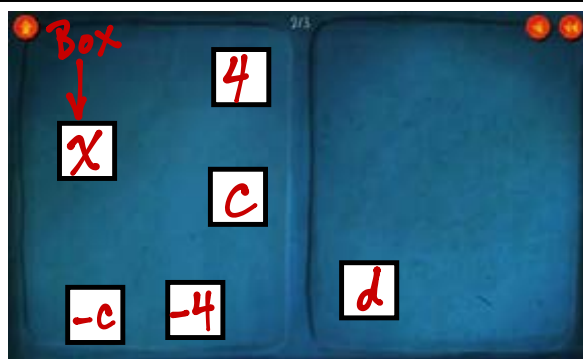
Solving Equations

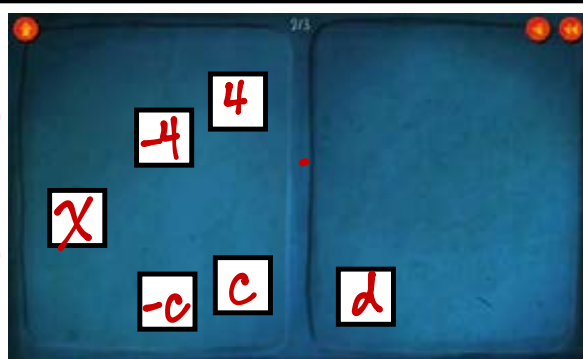## Graphical Representation   Numerical Representation

1   *SAME AS*

Box → x 4 c d $-c$ -4

2   *SAME AS*

4 4 x $-c$ c d

3   *SAME AS*

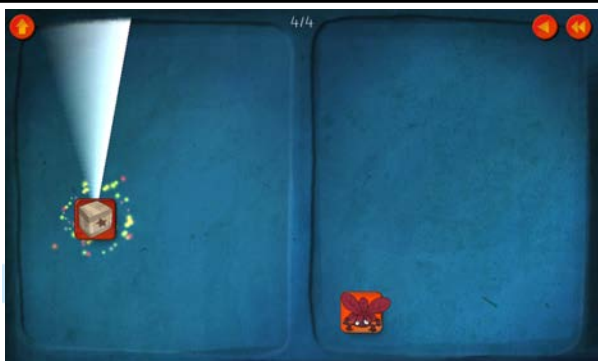0 x 0 d

4   *SAME AS*

x d
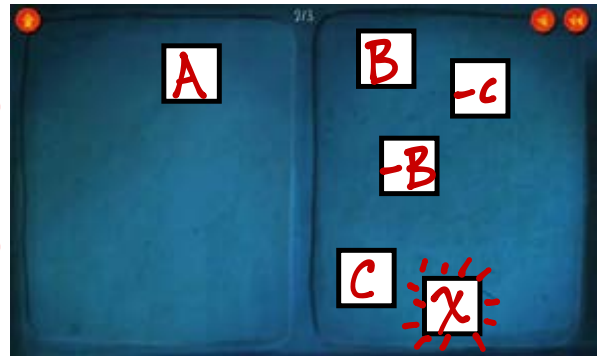
$$x = d$$

Graphical Representation   **Numerical Representation**

1

SAME AS

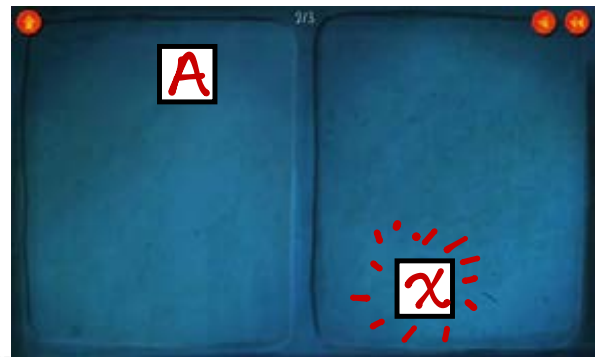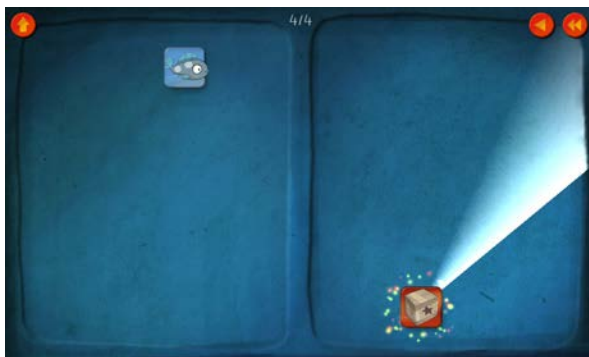SAME AS $\quad A = B - c + c - B + x$

Algebraic Representation

2

SAME AS

SAME AS $\quad A = 0 + 0 + x$

3

SAME AS $\quad A = x$

Graphical Representation   **Numerical Representation**

1

SAME AS

You can add a card from the deck.

SAME AS

$$y + A = W$$

Algebraic Representation

2

SAME AS
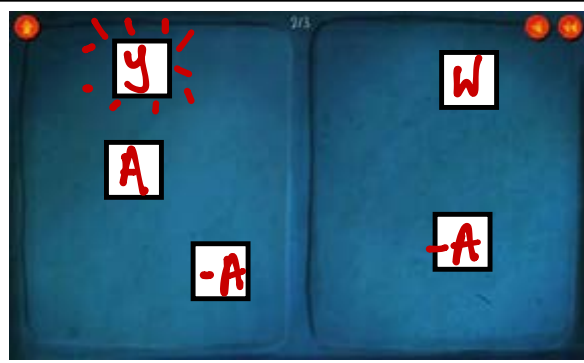
If you add a card from the deck, be sure you add a card on BOTH sides.

SAME AS

$$y + A - A = W - A$$

3

SAME AS

SAME AS

$$y + O = W - A$$

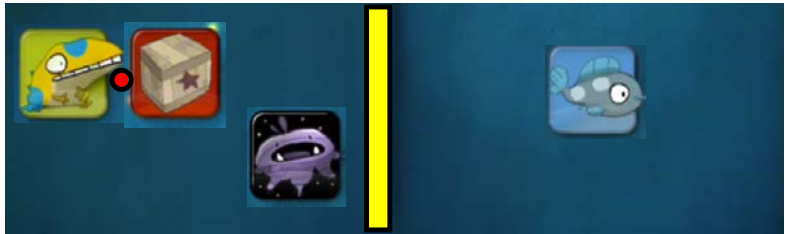**4**

SAME AS

SAME AS

$$y = W - A$$
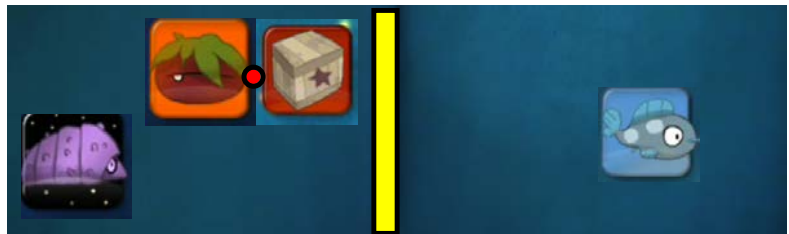
6.2: Steps to Solving Equations

Steps:

> **1.** Get all variable terms on one side of the equation (equal sign) and all constant terms on the other side. **Shortcut – Switch the side means switch the sign.**
>
> **2.** Simplify both sides by adding/subtracting like terms.
>
> **3.** Divide both sides by the coefficient (the number in front of the variable term).

Task #1: Solve the following equations.

$3x - 5 = 10$
$+5 \quad +5$
$\dfrac{3x}{3} = \dfrac{15}{3}$
$x = 5$

$4x - 3 = 17$
$+3 \quad +3$
$\dfrac{4x}{4} = \dfrac{20}{4}$
$x = 5$

$18 + 5m = -57$
$-18 \qquad -18$
$\dfrac{5m}{5} = \dfrac{-75}{5}$
$m = -15$

$12m - 36 = -180$
$+36 \quad +36$
$\dfrac{12m}{12} = \dfrac{-144}{12}$
$m = -12$

Taken from Sec. 5.9

Answer the following questions by solving the equation in each situation.

1. Renting a car for the weekend costs $50 plus $0.16/km.

$$C = 50 + 0.16d$$
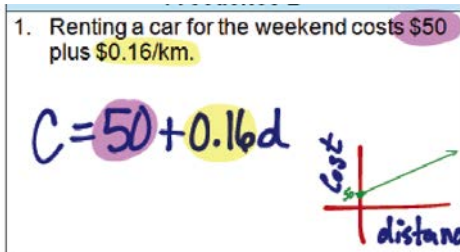
a) How much would it cost if you drove 250 km over the weekend?

b) How far could you drive if you could only afford a bill of $100 total for the weekend?

a) How far would the race car have travelled after a 2.5 hour race at this speed?

2. A race car travels at a constant speed of 220 km/h. Write an equation for the total distance travelled over time. **0 km initial**

$$d = 220t$$

b) How long would it take for the car to travel 815 km?

a) How much would the vehicle be worth after 8 years?

b) How old would the vehicle be if the value was $22,500?

3.

Depreciated Value of a Mid-size Car
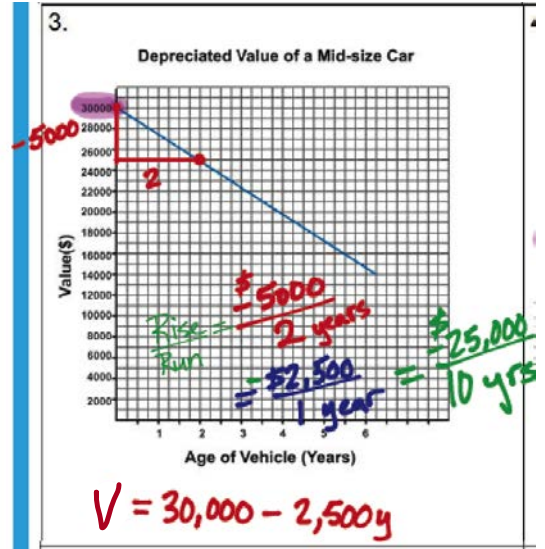
-5000

$$\text{Rise} = \frac{-5000}{2 \text{ years}} = -\$2,500 \text{ per } 1 \text{ year} = -\$25,000 / 10 \text{ yrs}$$

Value($)

Age of Vehicle (Years)

$$V = 30,000 - 2,500y$$

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a) How high would the balloon be after 5 minutes?

b) How long would it take for the balloon to drop to 3m high?

4.

Height of a Balloon

$$\text{Rate of Change} = \frac{\text{Rise}}{\text{Run}} = \frac{-3m}{1.5 \text{ mins}} = \frac{-2m}{1 \text{ min}}$$

-3

1.5

Height (m)

Time (minutes)

$$H = 15 - 2t$$
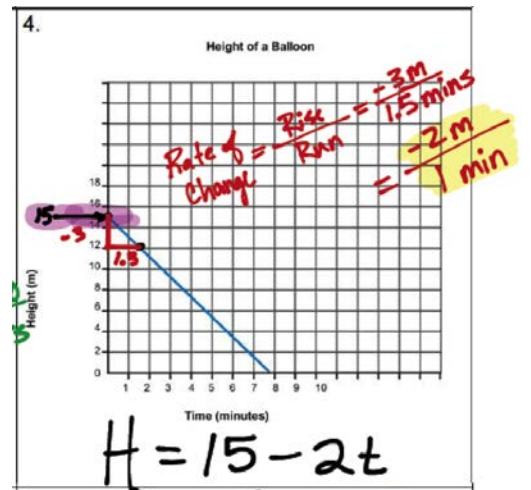
a) How much would it cost for a 32 km taxi trip?

5.

Distance (km)	Cost of a Taxi Fare ($)
10	6.50
20	9.50
30	12.50
40	15.50
50	18.50

$$\frac{Rise}{Run} = \frac{\$3}{10Km} = \frac{\$0.30}{1\ Km}$$

b) How far could you travel if you had exactly $50?

$$C = 3.50 + 0.3d$$

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a) What would the cost be for a 1,600km trip?

6.

Distance (km)	Cost of Bus Charter ($)
100	210
200	250
300	290
400	330
500	370

b) How far could you travel if your budget was $850?

$$Rate\ of\ Change = \frac{Rise}{Run} = \frac{\$40}{100\ Km} = \frac{\$0.40}{1\ Km}$$

$$C = 170 + 0.4d$$

Solving Equations (Continued...)

$14 = 6 + 2x$

$-20 = 4 - 4w$

$165 = -11d + 22$

$4m + 3 = -73$

$-4a + 4 = 0$

$3 + 5m = -22$

Solve each equation. Check your answer.

$3x - 2 = 4$	$4x + 1 = -7$
$-4 = 2 + 2a$	$3 - b = -2$
$-4x + 1 = -3$	$3t + 6 = 9$