Week 17

Monday 13th July 2020

Year 6 Use Two Step Equations - Varied Fluency and Reasoning & Problem Solving

*Today's lesson has both **Varied Fluency and Reasoning & Problem Solving.** Please complete both sheets **(VF and RPS)** as follows**:**
- **Squares** complete **D**
- **Rectangles & Triangles** complete **E**
- **Circle** complete **GD**

*Review how to solve a two step equation using the link:
https://www.youtube.com/watch v=AP5MbH88cdo&t=42s

Two Step Equations

1a. Are the following statements true or false?

i. If $x = 4$, then $2x + 1 = 9$

ii. If $y = 5$, then $y + 2 = 7$

iii. If $z = 3$, then $2z - 1 = 4$

D

6 VF

1b. Are the following statements true or false?

i. If $x = 3$, then $x + 3 = 9$

ii. If $y = 4$, then $2y + 5 = 13$

iii. If $z = 6$, then $2z - 2 = 10$

D

6 VF

2a. What is the correct value of c?

$$2c - 7 = 13$$

| 15 | 18 | 10 |

D

6 VF

2b. What is the correct value of c?

$$2c + 12 = 18$$

| 5 | 3 | 7 |

D

6 VF

3a. Match each equation to the correct value of a.

$2a - 5 = 7$ $\qquad$ $a = 8$

$a + 4 = 12$ $\qquad$ $a = 5$

$8 = 3 + a$ $\qquad$ $a = 6$

D

6 VF

3b. Match each equation to the correct value of a.

$a - 3 = 6$ $\qquad$ $a = 3$

$a + 6 = 14$ $\qquad$ $a = 9$

$9 = 3 + 2a$ $\qquad$ $a = 8$

D

6 VF

4a. Fill in the missing operation to show how to solve the equation below.

$$x \quad - \quad 6 \quad = \quad 24$$

⬇ ▢

$$x \quad = \quad 30$$

D

6 VF

4b. Fill in the missing operation to show how to solve the equation below.

$$x \quad + \quad 5 \quad = \quad 22$$

⬇ ▢

$$x \quad = \quad 17$$
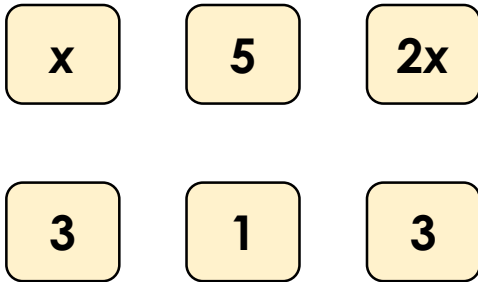
D

6 VF

Two Step Equations

1a. Using the cards below and addition or subtraction, create three balanced equations where $x = 2$.

x	5	$2x$
3	1	3

6 PS

1b. Using the cards below and addition or subtraction, create three balanced equations where $x = 3$.

3	4	x
1	$2x$	6
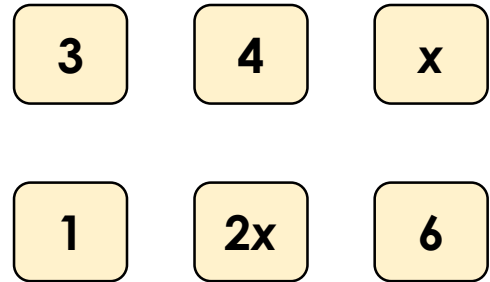
6 PS

2a. Choose a value for c and find three possibilities to complete the following equation.

$$2c - \boxed{} = \boxed{}$$

6 PS

2b. Choose a value for c and find three possibilities to complete the following equation.

$$2c + \boxed{} = \boxed{}$$

6 PS

3a. Scott and Mia are solving the following algebraic equation.

$$x + 6 = 13 + 2$$

Scott: x must be 6 for this equation to be balanced.

Mia: x must be 9 for this equation to be balanced.

Who is correct? Prove it.

6 R

3b. Ben and Freya are solving the following algebraic equation.

$$x + 3 = 8 + 4$$

Ben: x must be 9 for this equation to be balanced.

Freya: x must be 5 for this equation to be balanced.

Who is correct? Prove it.

6 R

Two Step Equations

Two Step Equations

5a. Are the following statements true or false?

i.   If $x = 6$, then $3x - 2 = 16$

ii. If $y = 4$, then $2y + y = 10$

iii. If $z = 8$, then $0.25z + 1 = 3$

6 VF

5b. Are the following statements true or false?

i.   If $x = 6$, then $0.5x + 2 = 5$

ii. If $y = 5$, then $4y - y = 15$

iii. If $z = 7$, then $3z + 4 = 10$

6 VF

6a. What is the correct value of c?

$$11c - 16 = 116$$

| 9 | 12 | 14 |

6 VF

6b. What is the correct value of c?

$$10c + 13 = 103$$

| 8 | 9 | 10 |

6 VF

7a. Match each equation to the correct value of a.

$9a \div 3 = 12$ $a = 0.5$

$\dfrac{1}{4} a + 11 = 14$ $a = 4$

$9 = 5 + 8a$ $a = 12$

6 VF

7b. Match each equation to the correct value of a.

$3a \div 2 = 12$ $a = 10$

$\dfrac{1}{2} a + 11 = 16$ $a = 0.25$

$8 = 7 + 4a$ $a = 8$

6 VF

8a. Fill in the missing operations to show how to solve the equation below.

$$5x - 7 = 18$$

⬇ A

$$5x = 25$$

⬇ B

$$x = 5$$

6 VF

8b. Fill in the missing operations to show how to solve the equation below.
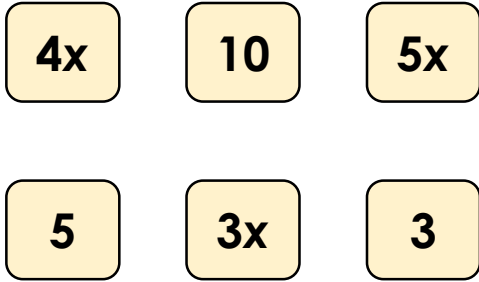
$$6x + 4 = 22$$

⬇ A

$$6x = 18$$

⬇ B

$$x = 3$$
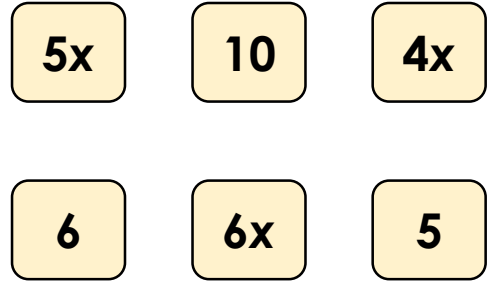
6 VF

Two Step Equations

4a. Using the cards below and any of the four operations, create three balanced equations where $x = 5$.

$4x$	10	$5x$
5	$3x$	3

6 PS

Two Step Equations

4b. Using the cards below and any of the four operations, create three balanced equations where $x = 10$.

$5x$	10	$4x$
6	$6x$	5

6 PS

5a. Choose a value for c and find three possibilities to complete the following equation.

$$\boxed{}\,c \;\div\; \boxed{} \;=\; 2$$

6 PS

5b. Choose a value for c and find three possibilities to complete the following equation.

$$\boxed{}\,c \;-\; \boxed{} \;=\; 12$$

6 PS

6a. James and Lily are solving the following algebraic equation.

$$6x - 15 = 21$$

James: This equation is impossible because 6 is smaller than 15.

Lily: x must be 6 for this equation to be balanced.

Who is correct? Prove it.

6 R

6b. Danny and Bella are solving the following algebraic equation.

$$60 \div 4x = 5$$

Danny: x must be 3 for this equation to be balanced.

Bella: This equation is impossible because $60 \div 4 = 15$.

Who is correct? Prove it.

6 R

Two Step Equations

9a. Are the following statements true or false?

i.   If $x = 12$, then $0.75x = 9$

ii. If $y = 7$, then $3y \div y = 5$

iii. If $z = 9$, then $7 - z = -1$

Two Step Equations

9b. Are the following statements true or false?

i.   If $x = 8$, then $0.75x = 2$

ii. If $y = 11$, then $4y \div y = 11$

iii. If $z = 7$, then $5 - z = -2$

10a. What is the correct value of c?

$$\frac{1}{5}c + 48 = 60$$

| 12 | 30 | 60 |

10b. What is the correct value of c?

$$\frac{1}{10}c + 91 = 100$$

| 10 | 80 | 90 |

11a. Match each equation to the correct value of a.

$18a + 24 = 30$ $a = 4$

$9a + 17 = 21.5$ $a = \frac{1}{3}$

$-5 = 6a - 29$ $a = 0.5$

11b. Match each equation to the correct value of a.

$20a + 36 = 41$ $a = 0.5$

$7a + 34 = 37.5$ $a = 5$

$-4 = 6a - 34$ $a = \frac{1}{4}$

12a. Fill in the missing operations to show how to solve the equation below.

$$28x \; + \; 6.3 = 10.3$$

⬇ **A**

$$28x \; = \; 4$$

⬇ **B**

$$x \; = \; \frac{1}{7}$$

12b. Fill in the missing operations to show how to solve the equation below.

$$45x \; + \; 9.6 = 14.6$$

⬇ **A**

$$45x \; = \; 5$$

⬇ **B**

$$x \; = \; \frac{1}{9}$$

7a. Using the cards below and any of the four operations, create three balanced equations where $x = 0.75$.

8x	**5**	**20x**
11	**-1**	**10**

6 PS

7b. Using the cards below and any of the four operations, create three balanced equations where $x = 0.25$.

9	**2**	**16x**
-2	**12x**	**6**

6 PS

8a. Choose a value for *c* and find three possibilities to complete the following equations.

$$\square\, c \div \square = 3$$

$$\square\, c - \square = -2$$

6 PS

8b. Choose a value for *c* and find three possibilities to complete the following equations.

$$\square\, c \div \square = 4$$

$$\square\, c - \square = -1$$

6 PS

9a. Alex and Priya are solving the following algebraic equation.

$$21x - 11.5 = -1$$

Alex: This equation is impossible as the answer is a whole number.

Priya: x must be 0.5 for this equation to be balanced.

Who is correct? Prove it.

6 R

9b. Oscar and Kelly are solving the following algebraic equation.

$$24x - 20.4 = -2.4$$

Oscar: x must be 0.75 for this equation to be balanced.

Kelly: This equation is incorrect as the answer is a negative number.

Who is correct? Prove it.

6 R