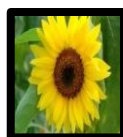
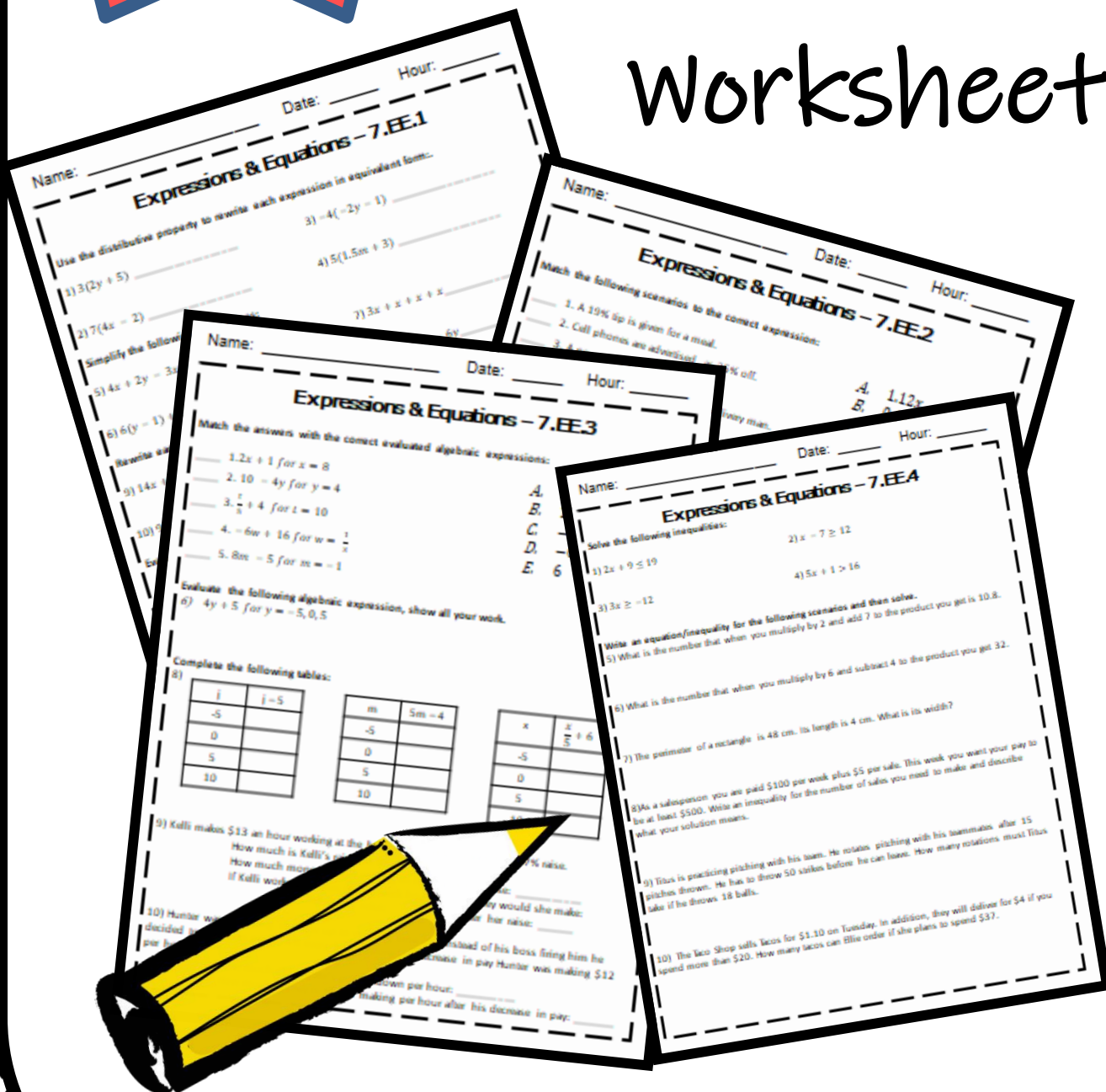


Grade

7

Expressions & Equations

Worksheets



By: Math in the Midwest

Name: _____ Date: _____ Hour: _____

Expressions & Equations – 7.EE.1

Use the distributive property to rewrite each expression in equivalent form:.

1) $3(2y + 5)$ _____

3) $-4(-2y - 1)$ _____

2) $7(4x - 2)$ _____

4) $5(1.5m + 3)$ _____

Simplify the following expressions:

5) $4x + 2y - 3x + 5 - y$ _____

7) $3x + x + x + x$ _____

6) $6(y - 1) + 2(y + 12)$ _____

8) $8(4y + 1) - 6y$ _____

Rewrite each expression by factoring out the greatest common factor:

9) $14x + 7$ _____

11) $-15y - 25$ _____

10) $9m - 12$ _____

12) $12b + 20$ _____

Evaluate the expression for the given value

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

13) $x = 5$

14) $x = \frac{1}{2}$

Determine which of the following students is correct and explain why:

Emily's work: $2(3x + 1) - 4x = x + 2$

Joshua's work: $2(3x + 1) - 4x = 9x + 2$

Tiffany's work: $2(3x + 1) - 4x = 2x + 2$

Expressions & Equations – 7.EE.2

Match the following scenarios to the correct expression:

- | | |
|--|--------------------------|
| _____ 1. A 19% tip is given for a meal. | <i>A.</i> $1.12x$ |
| _____ 2. Cell phones are advertised as 35% off. | <i>B.</i> $0.65x$ |
| _____ 3. A new car is 40% off. | <i>C.</i> $\frac{3}{5}x$ |
| _____ 4. A 12% tip is given to the pizza delivery man. | <i>D.</i> $1.19x$ |
| _____ 5. Clothes are advertised as 75% off. | <i>E.</i> $\frac{1}{4}x$ |

Write an algebraic expression that represents the total cost after the discount of the following situation:

- 6) A new winter coat is advertised as $\frac{1}{2}$ off.
- 7) A new video game is advertised as 24% off.

Write an expression to represent the following situations:

- 8) The price of a TV, t , and the sales tax is 7.5%.
- 9) The price of gasoline, g , minus $\frac{2}{7}$ the original price.

Complete the following statements to generate equivalent expressions:

- 10) $4x + 2 = \underline{\hspace{1cm}} (2x + \underline{\hspace{1cm}})$
- 11) $36 + 12y = \underline{\hspace{1cm}} (\underline{\hspace{1cm}} + 4y)$
- 12) $5m + 25 = 5(\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$

Correct the following simplification mistakes:

- 13) $m - \frac{3}{4}m = m$
- 14) $w + 0.09w = 1.9w$
- 15) $h - \frac{2}{5}h = \frac{2}{5}h$

Name: _____ Date: _____ Hour: _____

Expressions & Equations – 7.EE.3

Match the answers with the correct evaluated algebraic expressions:

_____ 1. $2x + 1$ for $x = 8$

A. 14

_____ 2. $10 - 4y$ for $y = 4$

B. 17

_____ 3. $\frac{t}{5} + 4$ for $t = 10$

C. -13

_____ 4. $-6w + 16$ for $w = \frac{1}{3}$

D. -6

_____ 5. $8m - 5$ for $m = -1$

E. 6

Evaluate the following algebraic expression, show all your work.

6) $4y + 5$ for $y = -5, 0, 5$

Complete the following tables:

8)

j	$j - 5$
-5	
0	
5	
10	

m	$5m - 4$
-5	
0	
5	
10	

x	$\frac{x}{5} + 6$
-5	
0	
5	
10	

9) Kelli makes \$13 an hour working at the bakery and her boss gave her a 7% raise.

How much is Kelli's raise per hour: _____

How much money is Kelli making an hour after her raise: _____

If Kelli works 25 hours in one week how much money would she make:

Before her raise: _____ After her raise: _____

10) Hunter was struggling to show up to work on time and instead of his boss firing him he decided to lower his pay by 4% every hour. Before his decrease in pay Hunter was making \$12 per hour.

How much did Hunter's pay go down per hour: _____

How much money is Hunter making per hour after his decrease in pay: _____

Name: _____ Date: _____ Hour: _____

Expressions & Equations – 7.EE.4

Solve the following inequalities:

1) $2x + 9 \leq 19$

2) $x - 7 \geq 12$

3) $3x \geq -12$

4) $5x + 1 > 16$

Write an equation/inequality for the following scenarios and then solve.

5) What is the number that when you multiply by 2 and add 7 to the product you get is 10.8.

6) What is the number that when you multiply by 6 and subtract 4 to the product you get 32.

7) The perimeter of a rectangle is 48 cm. Its length is 4 cm. What is its width?

8) As a salesperson you are paid \$100 per week plus \$5 per sale. This week you want your pay to be at least \$500. Write an inequality for the number of sales you need to make and describe what your solution means.

9) Titus is practicing pitching with his team. He rotates pitching with his teammates after 15 pitches thrown. He has to throw 50 strikes before he can leave. How many rotations must Titus take if he throws 18 balls.

10) The Taco Shop sells Tacos for \$1.10 on Tuesday. In addition, they will deliver for \$4 if you spend more than \$20. How many tacos can Ellie order if she plans to spend \$37.

Name: _____ Date: _____ Hour: _____

Expressions & Equations – 7.EE.1

Use the distributive property to rewrite each expression in equivalent form:.

1) $3(2y + 5)$ $6y + 15$

3) $-4(-2y - 1)$ $8y + 4$

2) $7(4x - 2)$ $28x - 14$

4) $5(1.5m + 3)$ $7.5m + 15$

Simplify the following expressions:

5) $4x + 2y - 3x + 5 - y$ $x + y + 5$

7) $3x + x + x + x$ $6x$

6) $6(y - 1) + 2(y + 12)$ $8y + 18$

8) $8(4y + 1) - 6y$ $26y + 8$

Rewrite each expression by factoring out the greatest common factor:

9) $14x + 7$ $7(2x + 1)$

11) $-15y - 25$ $-5(3y + 5)$

10) $9m - 12$ $3(3m - 4)$

12) $12b + 20$ $4(3b + 5)$

Evaluate the expression for the given value

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

13) $x = 5$

16

14) $x = \frac{1}{2}$

4

Determine which of the following students is correct and explain why:

Emily's work: $2(3x + 1) - 4x = x + 2$

Joshua's work: $2(3x + 1) - 4x = 9x + 2$

Tiffany's work: $2(3x + 1) - 4x = 2x + 2$

Tiffany is correct because $2(3x) = 6x$, $2(1) = 2$ and subtracting $4x$ from $6x$ gives you $2x$ so you are left with $2x + 2$

Expressions & Equations – 7.EE.2

Match the following scenarios to the correct expression:

- | | |
|---|-------------------|
| <u>D</u> 1. A 19% tip is given for a meal. | A. $1.12x$ |
| <u>B</u> 2. Cell phones are advertised as 35% off. | B. $0.65x$ |
| <u>C</u> 3. A new car is 40% off. | C. $\frac{3}{5}x$ |
| <u>A</u> 4. A 12% tip is given to the pizza delivery man. | D. $1.19x$ |
| <u>E</u> 5. Clothes are advertised as 75% off. | E. $\frac{1}{4}x$ |

Write an algebraic expression that represents the total cost after the discount of the following situation:

- 6) A new winter coat is advertised as $\frac{1}{2}$ off.

$$\text{Total Cost} = 0.5w$$

- 7) A new video game is advertised as 24% off.

$$w = \text{original cost of winter coat}$$

$$\text{Total Cost} = 0.76g$$

$$g = \text{original cost of video game}$$

Write an expression to represent the following situations:

- 8) The price of a TV, t , and the sales tax is 7.5%.

$$t + 0.075t = 1.075t$$

- 9) The price of gasoline, g , minus $\frac{2}{7}$ the original price.

$$g - \frac{2}{7}g = \frac{5}{7}g$$

Complete the following statements to generate equivalent expressions:

10) $4x + 2 = \underline{2} (2x + \underline{1})$

11) $36 + 12y = \underline{3} (\underline{12} + 4y)$

12) $5m + 25 = 5(\underline{m} + \underline{5})$

Correct the following simplification mistakes:

13) $m - \frac{3}{4}m = m$

$$\frac{1}{4}m$$

14) $w + 0.09w = 1.9w$

$$1.09w$$

15) $h - \frac{2}{5}h = \frac{2}{5}h$

$$\frac{3}{5}h$$

Name: _____ Date: _____ Hour: _____

Expressions & Equations – 7.EE.3

Match the answers with the correct evaluated algebraic expressions:

B 1. $1.2x + 1$ for $x = 8$

A. 14

D 2. $10 - 4y$ for $y = 4$

B. 17

E 3. $\frac{t}{5} + 4$ for $t = 10$

C. -13

A 4. $-6w + 16$ for $w = \frac{1}{3}$

D. -6

C 5. $8m - 5$ for $m = -1$

E. 6

Evaluate the following algebraic expression, show all your work.

6) $4y + 5$ for $y = -5, 0, 5$

$$\begin{array}{r} 4(-5) + 5 \\ -20 + 5 \\ -15 \end{array}$$

$$\begin{array}{r} 4(0) + 5 \\ 0 + 5 \\ 5 \end{array}$$

$$\begin{array}{r} 4(5) + 5 \\ 20 + 5 \\ 25 \end{array}$$

Complete the following tables:

8)

j	$j - 5$
-5	-10
0	-5
5	0
10	5

m	$5m - 4$
-5	-29
0	-4
5	21
10	46

x	$\frac{x}{5} + 6$
-5	5
0	6
5	7
10	8

9) Kelli makes \$13 an hour working at the bakery and her boss gave her a 7% raise.

How much is Kelli's raise per hour: \$0.91

How much money is Kelli making an hour after her raise: \$13.91

If Kelli works 25 hours in one week how much money would she make:

Before her raise: \$325 After her raise: \$347.75

10) Hunter was struggling to show up to work on time and instead of his boss firing him he decided to lower his pay by 4% every hour. Before his decrease in pay Hunter was making \$12 per hour.

How much did Hunter's pay go down per hour: \$0.48

How much money is Hunter making per hour after his decrease in pay: \$11.52

Expressions & Equations – 7.EE.4

Solve the following inequalities:

1) $2x + 9 \leq 19$

$x \leq 5$

2) $x - 7 \geq 12$

$x \geq 19$

3) $3x \geq -12$

$x \geq -4$

4) $5x + 1 > 16$

$x > 3$

Write an equation/inequality for the following scenarios and then solve.

5) What is the number that when you multiply by 2 and add 7 to the product you get is 10.8.

$2x + 7 = 10.8$

$x = 1.9$

6) What is the number that when you multiply by 6 and subtract 4 to the product you get 32.

$6x - 4 = 32$

$x = 6$

7) The perimeter of a rectangle is 48 cm. Its length is 4 cm. What is its width?

$8 + 2x = 48$

$x = 20 \text{ cm}$

8) As a salesperson you are paid \$100 per week plus \$5 per sale. This week you want your pay to be at least \$500. Write an inequality for the number of sales you need to make and describe what your solution means.

$5s + 100 \geq 500$

$s \geq 80$

Make at least 80 sales to make \$500

9) Titus is practicing pitching with his team. He rotates pitching with his teammates after 15 pitches thrown. He has to throw 50 strikes before he can leave. How many rotations must Titus take if he throws 18 balls.

$15p - 18 = 50$

$p = 4.533\ldots$

5 rotations

10) The Taco Shop sells Tacos for \$1.10 on Tuesday. In addition, they will deliver for \$4 if you spend more than \$20. How many tacos can Ellie order if she plans to spend \$37.

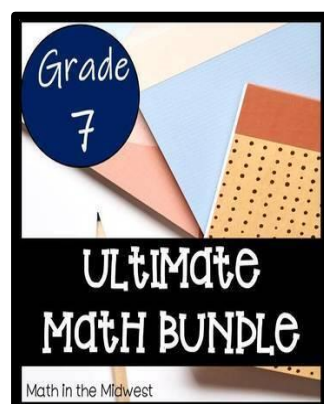
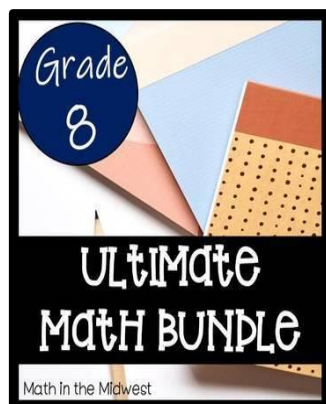
$1.10t + 4 = 37$

$t = 30$

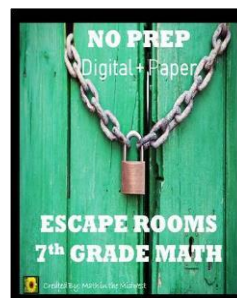
Ellie can order 30 tacos

Check out my other products!

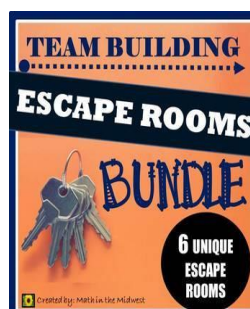
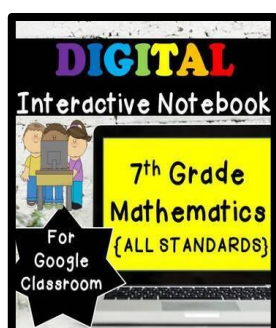
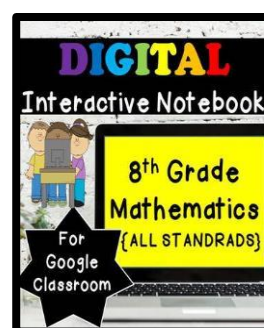
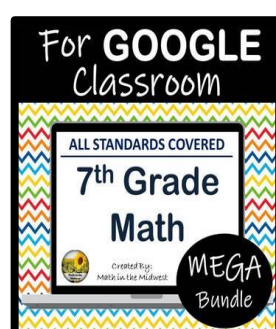
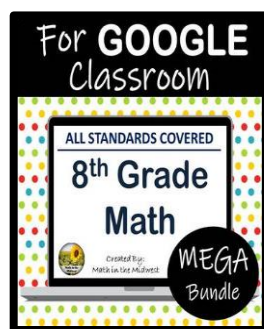
Ultimate Bundles:



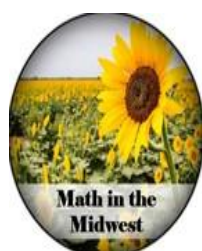
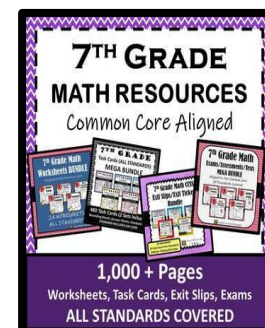
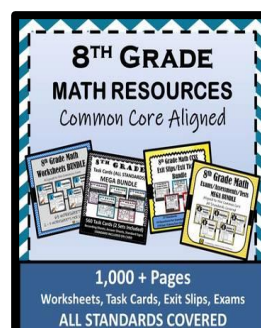
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