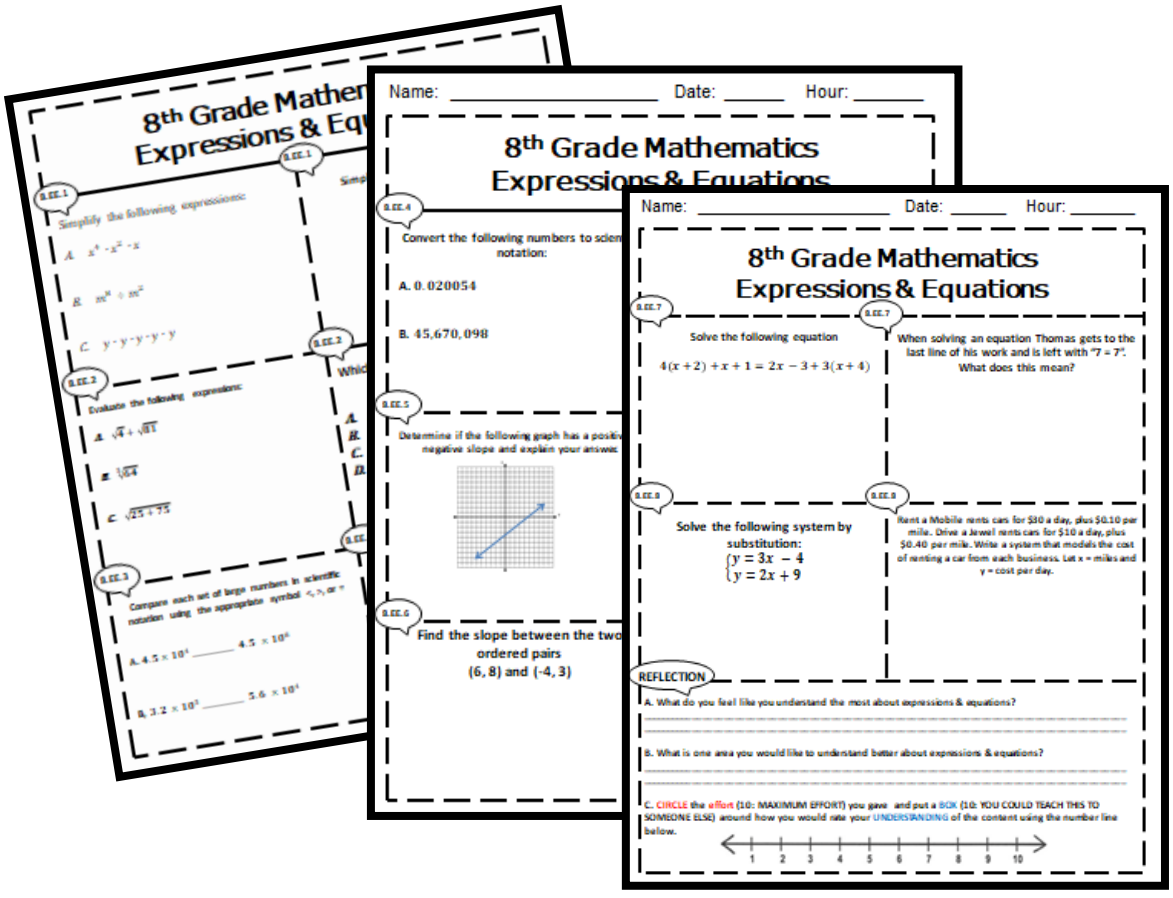
Grade 8

Expressions & Equations

Exam



2 QUESTIONS PER STANDARD

By: Math in the Midwest

Name: _____ Date: _____ Hour: _____

8th Grade Mathematics Expressions & Equations

8.EE.1

Simplify the following expressions:

A. $x^4 \cdot x^2 \cdot x$

B. $m^8 \div m^2$

C. $y \cdot y \cdot y \cdot y \cdot y$

8.EE.1

Simplify the following expression:

$$\frac{(w^4 \cdot w^2)^3}{w^{-3} \cdot w^6}$$

8.EE.2

Evaluate the following expressions:

A. $\sqrt{4} + \sqrt{81}$

B. $\sqrt[3]{64}$

C. $\sqrt{25 + 75}$

8.EE.2

Which shows the solution to $x^2 = 64$? Select all that apply

A. $x = 7$
B. $x = 8$
C. $x = -7$
D. $x = -8$

8.EE.3

Compare each set of large numbers in scientific notation using the appropriate symbol <, >, or =

A. 4.5×10^4 _____ 4.5×10^6

B, 3.2×10^3 _____ 5.6×10^4

8.EE.3

A small town in Kansas started with a population of 2,300 people 80 years ago. Now, the town has experienced significant growth and has a population of about 3,234,956 people. Approximately how many times larger is the current population in the Kansas town than it was 80 years ago?

Name: _____ Date: _____ Hour: _____

8th Grade Mathematics
Expressions & Equations

8.EE.4

Convert the following numbers to scientific notation:

A. 0.020054

B. $45,670,098$

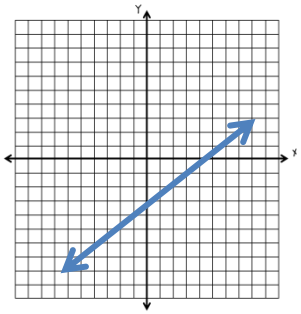
8.EE.4

Determine the unknown factors in the following equation:

A. $(2 \times 10^5)(? \times ?) = 8 \times 10^{12}$

8.EE.5

Determine if the following graph has a positive or negative slope and explain your answer.



8.EE.5

Does the following table represent a proportional relationship? Explain why or why not

Time	4	6	10
Distance	120	180	300

8.EE.6

Find the slope between the two ordered pairs
(6, 8) and (-4, 3)

8.EE.6

Identify the slope and y – intercept of the following equations:

a. $y = -5x - 3$

b. $y = x + 4$

c. $y = \frac{2}{5}x$

Name: _____ Date: _____ Hour: _____

8th Grade Mathematics
Expressions & Equations

8.EE.7

Solve the following equation

$$4(x+2)+x+1=2x-3+3(x+4)$$

8.EE.7

When solving an equation Thomas gets to the last line of his work and is left with "7 = 7". What does this mean?

8.EE.8

Solve the following system by substitution:

$$\begin{cases} y = 3x - 4 \\ y = 2x + 9 \end{cases}$$

8.EE.8

Rent a Mobile rents cars for $30 a day, plus $0.10 per mile. Drive a Jewel rents cars for $10 a day, plus $0.40 per mile. Write a system that models the cost of renting a car from each business. Let x = miles and y = cost per day.

REFLECTION

A. What do you feel like you understand the most about expressions & equations?

_____

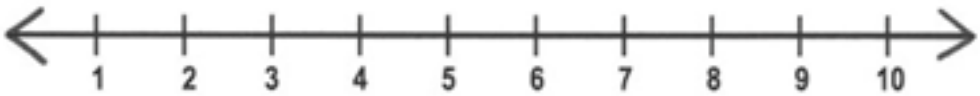
_____

B. What is one area you would like to understand better about expressions & equations?

_____

_____

C. CIRCLE the effort (10: MAXIMUM EFFORT) you gave and put a BOX (10: YOU COULD TEACH THIS TO SOMEONE ELSE) around how you would rate your UNDERSTANDING of the content using the number line below.



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8th Grade Mathematics Expressions & Equations

8.EE.1

Simplify the following expressions:

A. $x^4 \cdot x^2 \cdot x$

x^7

B. $m^8 \div m^2$

m^6

C. $y \cdot y \cdot y \cdot y \cdot y$

y^5

8.EE.1

Simplify the following expression:

$$\frac{(w^4 \cdot w^2)^3}{w^{-3} \cdot w^6}$$

w^{15}

8.EE.2

Evaluate the following expressions:

A. $\sqrt{4} + \sqrt{81}$

11

B. $\sqrt[3]{64}$

4

C. $\sqrt{25 + 75}$

10

8.EE.2

Which shows the solution to $x^2 = 64$? Select all that apply

A. $x = 7$

B. $x = 8$

C. $x = -7$

D. $x = -8$

8.EE.3

Compare each set of large numbers in scientific notation using the appropriate symbol <, >, or =

A. 4.5×10^4 _____ 4.5×10^6

<

B, 3.2×10^3 _____ 5.6×10^4

<

8.EE.3

A small town in Kansas started with a population of 2,300 people 80 years ago. Now, the town has experienced significant growth and has a population of about 3,234,956 people. Approximately how many times larger is the current population in the Kansas town than it was 80 years ago?

Starting Population: 2×10^3

Population After Growth 3×10^8

How many times greater: 1.5×10^5

Name: _____ Date: _____ Hour: _____

8th Grade Mathematics Expressions & Equations

8.EE.4

Convert the following numbers to scientific notation:

A. 0.020054

2.0054×10^{-2}

B. $45,670,098$

4.5670098×10^{7}

8.EE.4

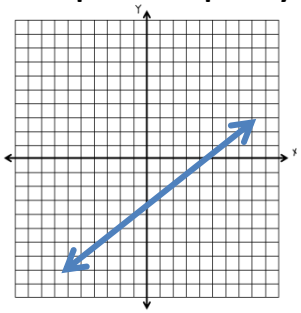
Determine the unknown factors in the following equation:

A. $(2 \times 10^{5})(? \times ?) = 8 \times 10^{12}$

4×10^{7}

8.EE.5

Determine if the following graph has a positive or negative slope and explain your answer.



Positive Slope b/c as the x values increase the y values are also increasing.

8.EE.5

Does the following table represent a proportional relationship? Explain why or why not

Time	4	6	10
Distance	120	180	300

Yes, $\frac{120}{4} = \frac{180}{6} = \frac{300}{10}$

8.EE.6

Find the slope between the two ordered pairs (6, 8) and (-4, 3)

Slope = $\frac{1}{2}$

8.EE.6

Identify the slope and y – intercept of the following equations:

a. $y = -5x - 3$ $m = -5$ and $b = -3$

b. $y = x + 4$ $m = 1$ and $b = 4$

c. $y = \frac{2}{5}x$ $m = \frac{2}{5}$ and $b = 0$

Name: _____ Date: _____ Hour: _____

8th Grade Mathematics
Statistics and Probability

8.EE.7

Solve the following equation

$$4(x+2)+x+1=2x-3+3(x+4)$$

Infinite Solutions

8.EE.7

When solving an equation Thomas gets to the last line of his work and is left with "7 = 7". What does this mean?

Infinite Solutions

8.EE.8

Solve the following system by substitution:

$$\begin{cases} y = 3x - 4 \\ y = 2x + 9 \end{cases}$$

(13, 35)

8.EE.8

Rent a Mobile rents cars for $30 a day, plus $0.10 per mile. Drive a Jewel rents cars for $10 a day, plus $0.40 per mile. Write a system that models the cost of renting a car from each business. Let x = miles and y = cost per day.

y = 0.1x + 30
y = 0.4x + 10

REFLECTION

A. What do you feel like you understand the most about expressions & equations?

_____

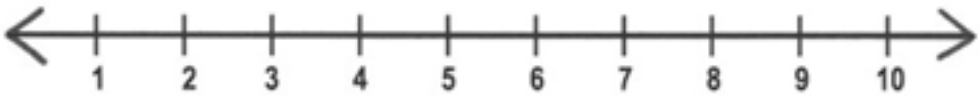
_____

B. What is one area you would like to understand better about expressions & equations?

_____

_____

C. CIRCLE the effort (10: MAXIMUM EFFORT) you gave and put a BOX (10: YOU COULD TEACH THIS TO SOMEONE ELSE) around how you would rate your UNDERSTANDING of the content using the number line below.



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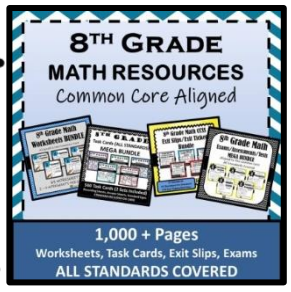

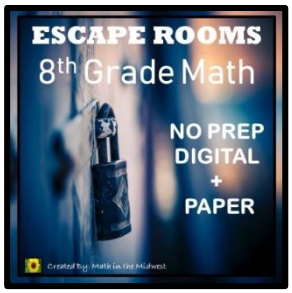

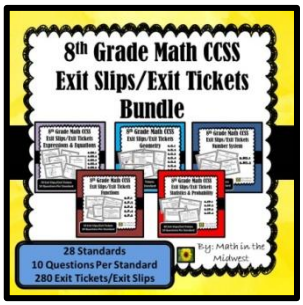

Credit & many thanks to:

Morpho

the Enlightened Elephant