Lesson 24. Classwork

WARM-UP

1.

Compare using >, <, or =.

$100 \times 2 \square 100 + 100 + 100$	$a \times 2 \square a \div 2$	$12 \div c \square 18 \div c$
$56 \times 3 \square 56 \times 8$	$m \times n \square n \times m$	$d \div 4 \square d \div 5$
$25 \times 4 \square 4 \times 25$	$b + b \times 7 \square b \times 8$	$y \div 1 \square y \times 1$
$17 \times 8 \square 7 \times 17$	$x \times 7 - x \square x \times 6$	$z + 1 \square z \times 1$

2.

Total each set of money amounts:

\$7.10	\$6.99	\$5.71	\$5.57	\$7.91
+ \$8.14	+ \$8.85	+ \$5.82	+ \$4.65	+ \$3.76

3.

Open up the parentheses:

$(s + 3) + (4 + a) =$_____ $(f + 4) - (g + 64) =$_____

$(n + b - d) + 14 =$_____ $(20 - t) - (w + v) =$_____

$(d + 8) + (7 - a) =$_____ $(20 - z) - (7 - a) =$_____

NEW MATERIAL

Order of Operations:

– Multiply and divide from left to right.
– Add and subtract from left to right.

– Grouping symbols such as parentheses () allow you to determine the order by which particular operations are performed. Parentheses are also used in this manner to clarify order of operations in confusing or abnormally large expressions.

4. Solve each expression using the correct order of operations (number the operation first):

$8 \div 1 + 2 \times 7 =$ _____

$30 \div 6 \times 7 - 21 \div 3 + 16 \div 8 =$ _____

$9 \times 4 - 45 \div 5 =$ _____

We read the ***absence*** of a written operator to indicate multiplication:

ab means a × b

3(a + b) means 3 × (a + b)

"Expanding" – removing parentheses:

Expand: $3 \times (5 + 2)$

Answer: $3 \times 5 + 3 \times 2$

It is now expanded.

5. Expand the following by removing parentheses:

$3(x + 6) =$ _____

$2(8 - x) =$ _____

$4(2x + 3) =$ _____

$5(4 - 3x) =$ _____

6. Solve each expression using the correct order of operations.

$(10 + 8) \div 2 =$ _____

$(9 - 3) \times 7 =$ _____

$(5 + 3) \div 4 =$ _____

$10 - 9 \div 3 =$ _____

Properties of Multiplication

Commutative property of multiplication $a \times b = b \times a$

Associative Property: $(a \times b) \times c = a \times (b \times c) = a \times b \times c$

Distributive property: $a \times (b + c) = a \times b + a \times c$,

If $b > c$, *then* $a(b - c) = a \times b - a \times c$

There are many times in algebra when you need to simplify an expression.

The **associative, commutative, and distributive properties** of algebra are the properties most often used to simplify algebraic expressions.

7. Sally collected aluminum cans for two days. On Friday morning she collected 20 cans and Friday night she collected 25 cans. On Saturday morning Sally collected 25 cans but on Saturday night only collected 20. Did she collect more on Friday than Saturday?

_____

_____

8. Volleyball uniform costs $13 for the shirt, $12 for pants, and $8 for socks. Write two equivalent expressions for the total cost of 12 uniforms. Then find the cost.

a)_____

b)_____

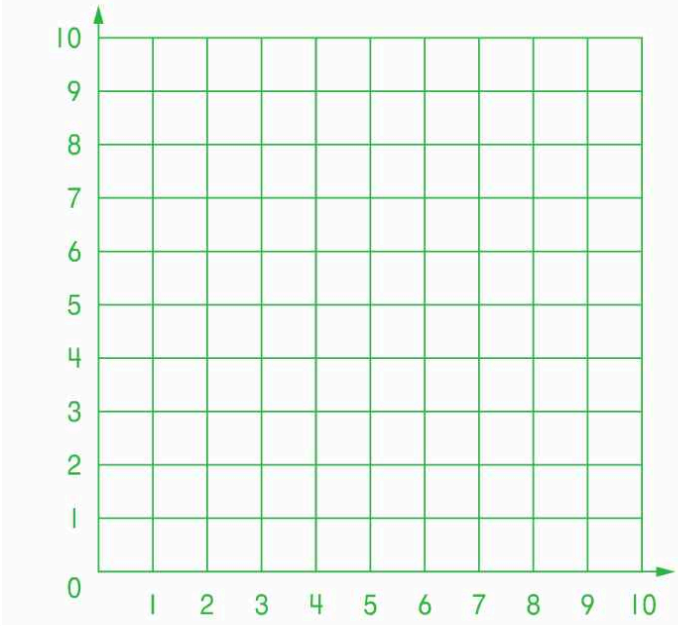
REVIEW

9. Two frogs – Ben and Dina decided to visit each other.

Ben started from point A (3, 5), then he jumped 5 squares to the right, to the point B. Then he jumped 2 squares up and end up at the point C. What are the coordinates of points B and C?

Dina started at the point K (8, 2), then she jumped 4 squares left to the point L, then she jumped 5 squares up to the point M. What are the coordinates of points L and M?

How many squares are between points C and M? What jumps Ben and Dina should make to meet each other? Mark the point of meeting as a point O and write its coordinates.



10. Write expressions for each word problem:

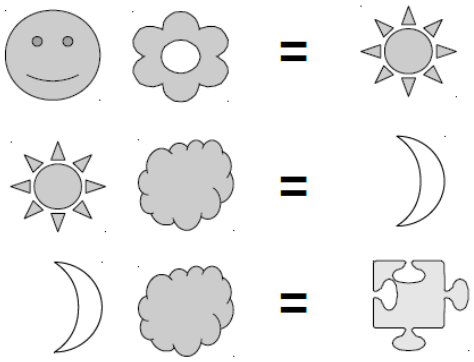
a) ***n*** apples were divided among ***x*** kids. How many apples did each kid receive? _____

b) ***x*** cookies were distributed evenly into ***m*** boxes. How many cookies are in each box? _____

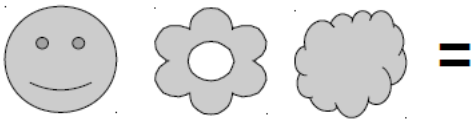
c) There are ***x*** cookies in each of 6 boxes. How many cookies are there in total?

_____

11. If you know that:



Then:

1. 

2. 

12. Draw the face of a cube that you **will not see** if you turn the cube

a) to the right b) backward c) forward

Did you know …

Kant's Clock

A famous old puzzle.

It is said that Immanuel Kant was a bachelor of such regular habits hat the people in his town would adjust their clocks when they saw him strolling past certain landmarks.

One evening Kant was dismayed to discover that his clock had run down. Evidently, his servant had forgotten to wind it. The great philosopher did not reset his hands because his watch was being repaired and he had no way of knowing the correct time. He walked to the home of his friend Schmidt, a merchant who lived a mile or so away, glancing at the clock in Schmidt's hallway as he entered the house.

After visiting Schmidt for several hours Kant left and walked home along the route by which he came. As always he walked with a slow steady gait that had not varied in twenty years. He had no notion how long this trip took. Nevertheless, when Kant entered his house, he immediately set his clock correctly.

How did Kant know the correct time?