Lesson 23. Classwork

WARM-UP

1. Grandma put 12 crepes on 2 plates. How many crepes can be on one plate?

Write down all possibilities: _____

What word should we add to the problem to get only one correct answer?

2. A clock shows 10:30 am. A school day started 100 minutes ago. When did school day start?

_____

3. Compare using >, <, or =.

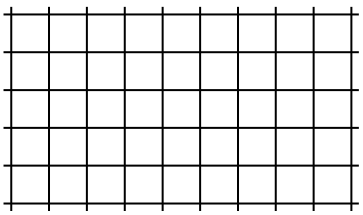
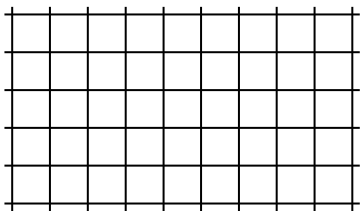
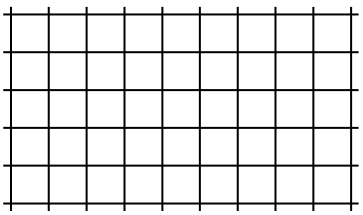
$254 - a \square 204 - a$ $\quad m - 63 \square m - 36$ $\quad c + d \square d + c$

$b - 287 \square b - 56$ $\quad 310 + n \square 305 + n$ $\quad 440 - k \square 540 - k$

4. Solve and check:

$351 + \mathbf{x} = 610$ $\quad \mathbf{y} - 119 = 333$ $\quad \mathbf{z} + 124 = 172$

x = _____ $\quad$ **y** = _____ $\quad$ **z** = _____

NEW MATERIAL

Multiplication and Division by 0.

Dividing by zero. Division is a reverse operation for multiplication.

$$A \div B = C \text{ means that } C \times B = A$$

$A \div 0$ has no meaning, as there is no number, which, multiplied by **0**, gives A (assuming A≠**0**), and so **division** by zero is undefined.

$$C \times 0 = 0 \text{ and never } = C$$

Dividing by 0 is not allowed ~~$a \div 0$~~

5. Solve equations:

X ÷ 3 = 7	x ÷ 4 = 6	3 × x = 21	6 × x = 24
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Associative and Distributive Properties of multiplication.

Associative Property: When three or more numbers are multiplied, the product is the same regardless of the grouping of the factors.

$$(a \times b) \times c = a \times (b \times c) = a \times b \times c$$

Distributive property: When we multiply a sum or difference by a number, it gives the same result as multiplying each term by the number and then adding the products together.

$4 \times (2 + 3) = 4 \times 2 + 4 \times 3$ or $a \times (b + c) = a \times b + a \times c$

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

6. a) Rewrite using distributive property:

3 x (n – t)= _____

9 (w – b)= _____

w (3 + 4) =_____

b) Rewrite each problem using the associative property and find the answer.

(10x5) x 8 = _____

(7x11) x 2 = _____

9 x (2x7) = _____

7. Calculate using the associative property of multiplication.

(8 × 2) × (6×5) = (2 ×5) × (8×6) = _____

(35 × 60) = (7 × 5) × (6 ×10) = _____

REVIEW

Commutative property of addition

The **Commutative property** of multiplication says that when two numbers multiplied together, the product is the same regardless of the order of multiplicands.

8. Which of the examples below illustrates the commutative property of multiplication?

6×1=6

6 x (2 x 7) = (6 x 2) x 7

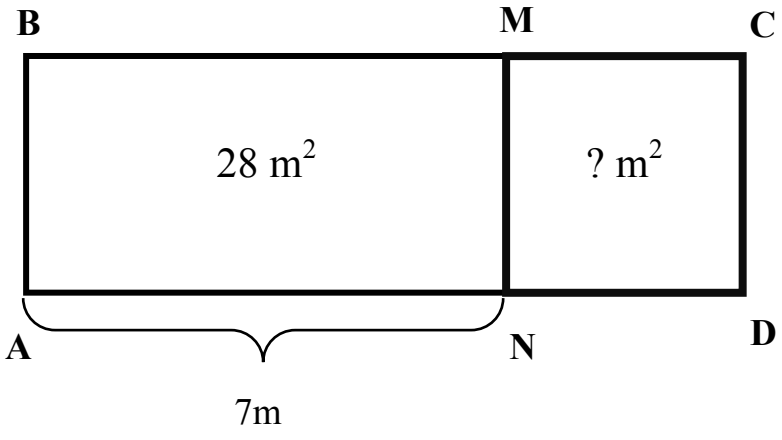
6×2=2×6

9×3=3×9

9×(3×7)=(9×3)×7

82 x 18=18 x 8

9. Find the area of square NMCD. A = _____



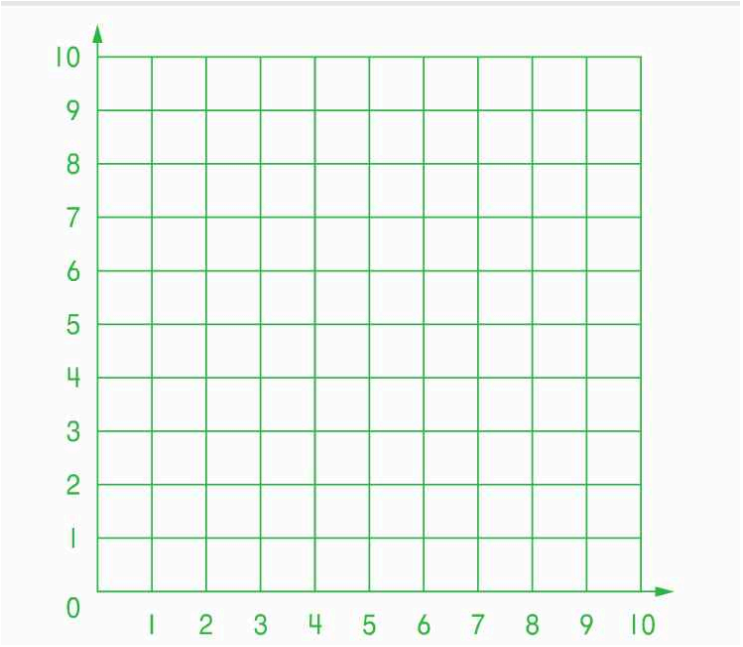
10.

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

Ben started from point A (2, 8), then he jumped 3 squares to the right, to the point B. Then he jumped 3 squares down and end up at the point C. What are the coordinates of points B and C?

Dina started at the point K (7, 1), then she jumped 4 squares up to the point L, then she jumped 4 squares to the left 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.



11.

Write expressions for each word problem:

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

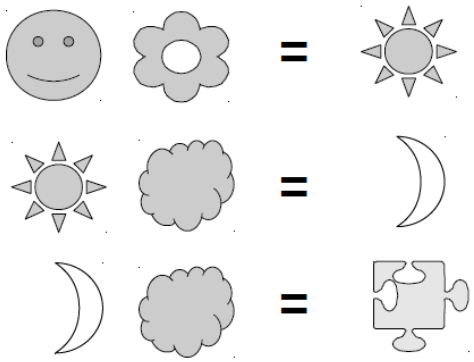
_____

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

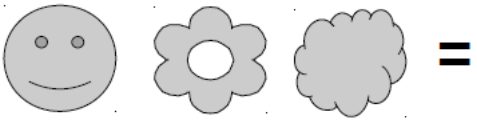
c) There are ***x*** cookies in each of 6 boxes. How many cookies are there in total?

_____

12. If you know that:



Then:

1. 

2. 

13. 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?