Math 3 Classwork 13

Warm-Up

1 Calculate.

$400 - 100 \times 2 =$ $350 - 50 \times 4 =$ $10 \times 8 + 250 =$

$25 \times 2 + 25 \times 4 =$ $60 - 20 \times 2 =$ $240 - 30 \times 8 =$

$35 \times 2 + 40 \times 6 =$ $190 - 15 \times 6 =$ $200 - 25 \times 6 =$

2 Compare expressions (<, >, =):

48 + 36 + 14 ____ 48 + (36 + 14)   73 – 17 + 29 ____ 73 – (17 + 29)

70 – 13 – 19 ____ 70 – (13 – 19)   84 + 31 – 37 ____ 84 + (31 + 37)

3 Find any **four** pairs of numbers, such that their product is:

a) 60 ________________________________

b) 120 ________________________________

c) 100 ________________________________

d) 84 ________________________________

REVIEW I

How do we work with parentheses?

The part between two parentheses is treated like a SINGLE number.

Removing parentheses.

$a + (b + c) = a + b + c$

$a + (b - c) = a + b - c$

$a - (b + c) = a - b - c$

$a - (b - c) = a - b + c$

4 Compare using <, > or =:

(27 + 16) – 43 ____ (60 + 15) – 74

51 – (13 + 19) ____ 12 + (85 – 79)

5 Open parentheses and calculate:

100 – (50 – 38) – (25 + 13) = ________________________________

(49 + 11 – 16) – (92 – 76) = ________________________________

(54 – 39) + (47 – 28) – (16 + 9) = ________________________________

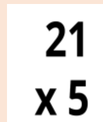
New Material I

Multiplication 2-digit numbers by 1-digit numbers without regrouping.

One – Digit – One – Line method (using the column form)

The **column form** is the most common way to solve 2-digit by 1-digit multiplication problems. This is also called the **standard method**.

First, arrange the numbers in **column form**.

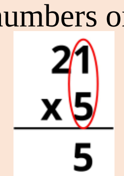


Write the **2-digit** number at the **top**, and the **1-digit** number at th**e bottom.**

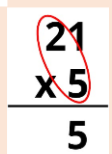
Also, remember to **align the place values** correctly.

Then start multiplying with the numbers on the right. $5 \times 1 = 5$

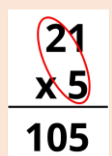
We write 5 in the ones place:



Next, we multiply $5 \times 2 = 10$



Last, we write 10 before 5:

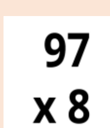


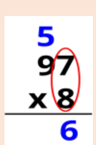
Our answer is 105! In this simple case, we can check our answer by performing an addition: 21 + 21 + 21 + 21 + 21 = 105.

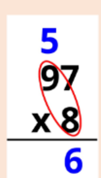
Multiplying with regrouping.

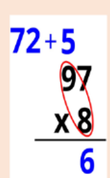
$\mathbf{8 \times 97 = ?}$

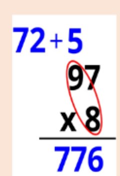
Explain each step











6. Multiply using a column form:

$19 \times 5 =$ $47 \times 4 =$ $63 \times 6 =$

7 Solve problems:

a) A barrel holds 42 gallons of oil. How many gallons of oil can 8 such barrels hold? ________

b) A class of 26 students was preparing for the test. Each student was supposed to solve 7 addition problems, 7 subtraction problems and 5 multiplication problems. How many problems the students of the class solved altogether? ______________________________

8 a) Use any 3 of these digits: 1, 2, 3 and 4 in the spaces below to make the answer 72.

☐☐ × ☐ = 72

b) Use any 3 of these digits: 1, 2, 3 and 4 in the spaces below to make the largest possible answer.

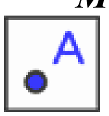
☐☐ × ☐ = (is as large as possible)/

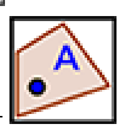
c) Use any 3 of these digits: 1, 2, 3 and 4 in the spaces below to make the smallest possible answer.

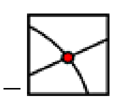
☐☐ × ☐ = (is as small as possible)

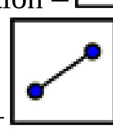
New Material II

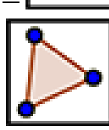
"Many faces" of a POINT.

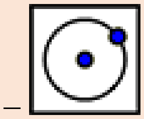
I. Point on the plane – 

II. Point plotted on the shape – 

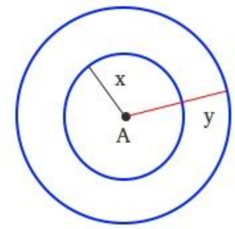
III. Point as a position of the line intersection – 

IV. Points as the endpoints of a segment – 

V. Points as the vertexes of a polygon – 

VI. Point is a center of the circle that is passing through another point – 

Concentric circles are circles that share the same center. However, radii of concentric circles are not equal. To name a circle, we use the name of the center. Since concentric circles have the same center, you may use the radii to that end!
For example, to name the big circle, you could say circle with center A and radius y – (A, y)



Name the smaller circle: _____________

9. a) Use a compass to draw a circle centered at a given point **A** and passing through another point **B** (choose your own compass opening).
b) Use a straightedge and connect the point **B** on the circle to the center **A** to make a radius ***r***.

c) Mark another point **C** at any place between points **A and B.** Using a compass draw a circle with a radius $\overline{AC}$**.**

d) Mark one more point **D** at any place between points **A and C.** Using a compass draw a circle with a radius $\overline{AD}$**.**

● **A**

10 Practice to draw concentric circles. Place a center A in the middle of the page. Using a compass, draw 3 circles – with a radius 6 cm, 5 cm and 3 cm. Name each circle.

Did you Know …?

Like many interesting shapes, circles are all around us every day. But how often do you notice them? Circles have fascinated people throughout the ages, so let's explore some of the most famous and mysterious circles in history.

In Ancient Greek culture, the circle was thought of as the perfect shape. Can you guess why? How many lines of symmetry does a circle have, for instance? To the Greeks, the circle was a symbol of divine symmetry and balance in nature. Greek mathematicians were fascinated by the geometry of circles and explored their properties for centuries.
The study of the circle goes back beyond recorded history. The invention of the wheel is a fundamental discovery of the properties of a circle. The Greeks considered the Egyptians as the inventors of geometry.

There are many puzzles based on circles. One mystery that the Greeks could never solve and that no one has ever solved since is called 'Squaring the circle.' The challenge was to construct a square with exactly the same area as a given circle, using only a set of compasses and a straight edge. You weren't allowed to measure or calculate the circle area; you had to do it all by geometrical construction. People have been trying for centuries to solve it, but in 1882 it was proved to be mathematically impossible. For that reason, people who continued to try to solve it were considered to be chasing a dream, and the term *"circle-squarer" became a well-known insult used for someone who attempted the absurdly impossible.*

Circles are still symbolically important today – they are often used to symbolize harmony and unity. For instance, take a look at the Olympic symbol. It has five interlocking rings of different colors, representing the five major continents of the world united together in a spirit of healthy competition.