Math 3, Classwork 11

WARM-UP

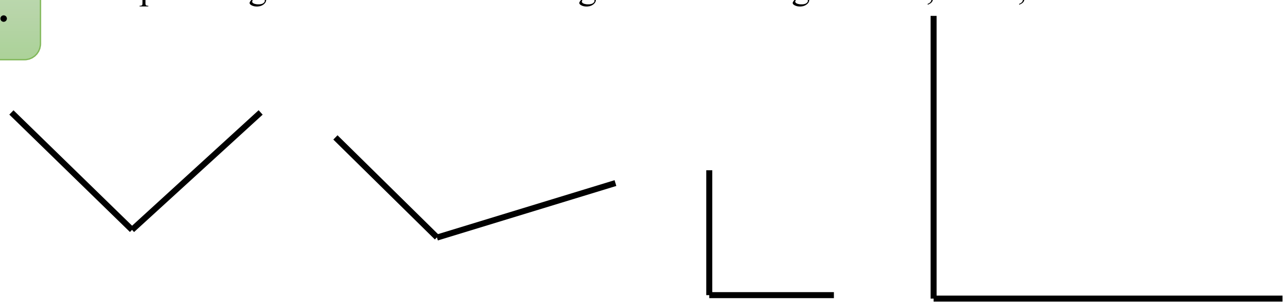
1. a) Arrange these numbers in increasing order, beginning with the least.

2400   4002   2040   420   2004 ________________________________

b) Arrange these numbers in decreasing order, beginning with the greatest.

1470   847   710   1047   147 ________________________________

2. Compare angles without measuring them. Use signs “ = ”, “ < ”, and “ > ”:

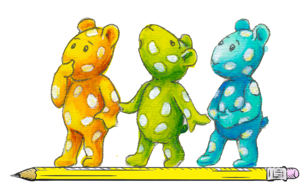


a)   b)

3. There are 2 supplementary angles. One angle is 43^0. How many degrees are there in the 2^{nd} angle? ________________________________

4. Both letters A stand for the same digit. Find the value of A.

$$\begin{array}{r} 2A06 \\ -\ 134A \\ \hline 1458 \end{array}$$



REVIEW I

Perimeter of a rectangle

To compute the perimeter of a rectangle you add the length, *l* and width, *w* and double this sum.

5. a) Using a definition above, write an expression for the perimeter of a rectangle.

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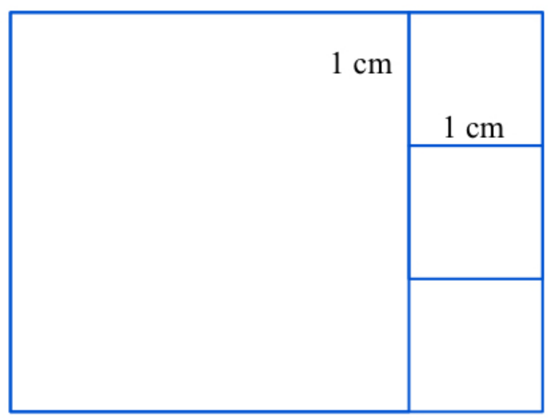
b) Use the expression you wrote to find the perimeter of a rectangle with length 30 and width 75. ______________________________________

6. The rectangle consists of the squares. The side of the small square is 1 cm. a) Find a perimeter of the rectangle.



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b) Find an area of a rectangle

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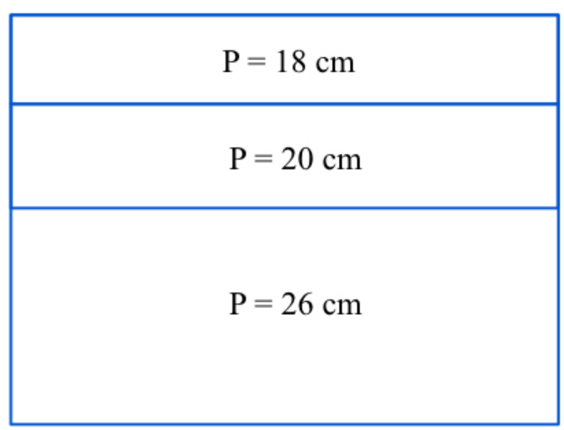
7. The square was divided on 3 rectangles with given perimeters (see the drawing).



a) Find the perimeter of the square

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b) Find the area of the square ______________________________

NEW MATERIAL

Multiplying by One Digit: The Partial Products Method

"Partial products" method OR distributive property method.

For example: $271 \times 6 = (200 + 70 + 1) \times 6 = (200 \times 6) + (70 \times 6) + (1 \times 6)$

To do multiplication we basically write down the answers to these three multiplication problems – they are easy because they are doing one-digit multiplication problem, adding some zeros – and then add them up.

$$\begin{array}{r} 271 \\ \times\ 6 \\ \hline \end{array}$$

1200	$200 \times 6 = 1200$
420	$70 \times 6 = 420$
6	$1 \times 6 = 6$
1626	

8. Using an example above, multiply:

a) 466×5

b) 307×7

Multiplying by One Digit: One – Digit – One – Line method

You work from right to left multiplying one digit at a time.

To multiply a 3-digit number, we start from the ones, then the tens and lastly the hundreds.

Find the product of 312 and 3.

$$\begin{array}{r} 3\ 1\ 2 \\ \times \quad\ \ 3 \\ \hline 9\ 3\ 6 \end{array}$$

Multiply from right to left.

Step 1: Multiply the ones.
2 ones x 3 = 6 ones

Step 2: Multiply the tens.
1 ten x 3 = 3 tens

Step 3: Multiply the hundreds.
3 hundreds x 3 = 9 hundreds

The product of 312 and 3 is 936.

9. Multiply

a) $\begin{array}{r} 4\,0 \\ \times \quad 2 \\ \hline \\ \hline \end{array}$

b) $\begin{array}{r} 2\,3 \\ \times \quad 3 \\ \hline \\ \hline \end{array}$

c) $\begin{array}{r} 5\,2 \\ \times \quad 4 \\ \hline \\ \hline \end{array}$

d) $\begin{array}{r} 1\,4\,3 \\ \times \quad\ 2 \\ \hline \\ \hline \end{array}$

When we multiply, if the product of the digits in each place is 10 or greater, we **regroup**.

10 ones = 1 ten
10 tens = 1 hundred
10 hundreds = 1 thousand

Find the product of 475 and 3.

$$\begin{array}{rcccc} & & {}^{2}4 & {}^{1}7 & 5 \\ \times & & & & 3 \\ \hline & 1 & 4 & 2 & 5 \end{array}$$

Multiply from right to left.

Step 1: Multiply the ones.
5 ones x 3 = 15 ones
Regroup the ones.
15 ones = 1 ten 5 ones

Step 2: Multiply the tens.
7 tens x 3 = 21 tens
21 tens + 1 ten = 22 tens
Regroup the tens.
22 tens = 2 hundreds 2 tens

Step 3: Multiply the hundreds.
4 hundreds x 3 = 12 hundreds
12 hundreds + 2 hundreds = 14 hundreds
Regroup the hundreds.
14 hundreds = 1 thousand 4 hundreds

The product of 475 and 3 is 1425.

10.

a)
$$\begin{array}{rr} & 39 \\ \times & 2 \\ \hline & \_\_\_ \end{array}$$

b)
$$\begin{array}{rr} & 48 \\ \times & 7 \\ \hline & \_\_\_ \end{array}$$

c)
$$\begin{array}{rr} & 56 \\ \times & 4 \\ \hline & \_\_\_ \end{array}$$

d)
$$\begin{array}{rr} & 65 \\ \times & 7 \\ \hline & \_\_\_ \end{array}$$

REVIEW II

11. Convert to cm:

a) 2m 8 dm ____________________
b) 3dm 6cm ____________________
c) 5m 5cm _____________________

Did you know …

Why do we count the way we do, following the number 9 with a new number consisting of a 1 and a 0? Having used 10 digits (0 through 9) to count to 9, we make a new "tens place," and assume that the digit in that position is the number of tens. For example, 57 is 5 tens and 7 ones. This saves us from needing a new digit for each number; we can stick to our original ten digits. When we get up to 99, we need to add another place, making the next position represent the number of hundreds.

Base-10 is used in most modern civilizations and was the most common system for ancient civilizations, most likely because humans have 10 fingers. Egyptian hieroglyphs dating back to 3000 B.C. show evidence of a decimal system. This system was handed over to Greece, although the Greeks and Romans commonly used base-5 as well. Decimal fractions first came into use in China in the 1st century B.C.

Some other civilizations used different number bases. For example, the Mayans used base-20, possibly from counting both fingers and toes. The Yuki language of California uses base-8 (octal), counting the spaces between fingers rather than the digits.

Basic computing is based on a binary or base-2 number system in which there are only two digits: 0 and 1. Programmers and mathematicians also use the base-16 or hexadecimal system, which as you can probably guess, has 16 distinct numeral symbols. Computers also use base-10 to perform arithmetic.

Telling time requires a slightly different system. There are 60 seconds in every minute and 60 minutes in every hour. So if your watch displays 10:04:59 right now, then you expect it to read 10:05:00 a second later.