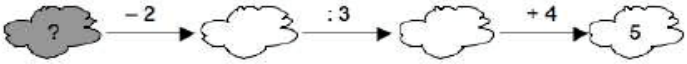
Math 3 Classwork 19

Warm Up

Practice Math Kangaroo

Independent work

1 Which number needs to be put into the dark cloud, to have all the given calculations right?



A) 1 B) 3 C) 5 D) 7 E) 9

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2 There are 9 lampposts on one side of the path in the park. The distance between each pair of neighbouring lampposts is 8 metres. George was jumping all the way from the first lamppost to the last one. How many metres has he jumped?

A) 48 B) 56 C) 64 D) 72 E) 80

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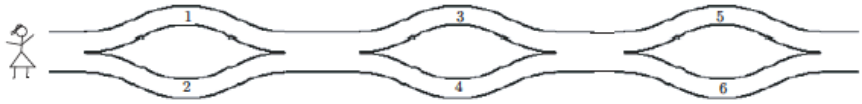
3 Zita walks from the left to the right and puts the numbers in her basket. Which of the following numbers can be in her basket?



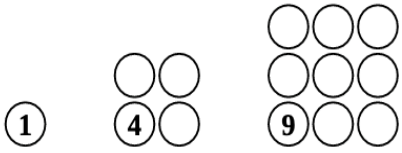
A) 1, 2 and 4 B) 2, 3 and 4 C) 2, 3 and 5 D) 1, 5 and 6 E) 1, 2 and 5

Homework Review

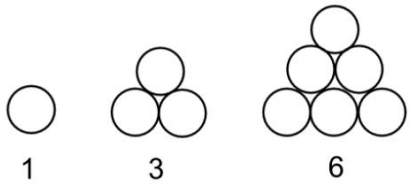
4 Jonathan's mother wants to repaint one wall in his room. The wall is 10 feet long, the ceiling of the room is 8 feet high. There is a one window in the wall, which is 3 foot wide and 5 foot high. What is the area in square feet of the part of the wall that she wants to paint? Draw a picture of the wall with a window to help you with calculations.

A = _____

5 a) Do you remember "square" numbers? Construct the next two. What is the pattern?



b) Do you remember "triangle" numbers? Construct the next four. What is the pattern?



New Material I

6 What is the greatest number which can be placed in the parenthesis?

Example: 20 × ( ) < 85. Think: how many groups of 20 are there in number 85? Answer: 4

50 × ( ) < 156 70 × ( ) < 232 80 × ( ) < 438

( ) × 20 < 108 ( ) × 30 < 149 ( ) × 40 < 278

7 Julia and Victoria decided to make a present for their grandparents – a photo album. They had 46 photographs to put in the album. A full-page holds six photographs. What is the smallest number of pages girls should use to put all the photos? How many photos will the last page hold?

_____

_____

Division with remainders. All numbers are whole numbers!

Division is different from addition, subtraction, and multiplication. When you divide two numbers you can end up with a **remainder.** A remainder is simply a portion of the dividend which is left over after one number is divided by another number.

$m \div n = q\ R\ r,\ m > n,\ r < q$

In general, if *m* is **dividend**, *n* is **divisor**, *q* is **quotient** and *r* is **remainder** then $m = n \times q + r$. Divisor *n* should always be greater than remainder *r*. $r < n$

Examples: 10 ÷ 3 = 3R1 9 ÷ 3= 3R0 8 ÷ 3 = Rr2 7 ÷ 3= 3R1

8 Calculate and write down the answer with a remainder where needed:

28 ÷ 3 = _____ 28 ÷ 4 = _____ 28 ÷ 5 = _____ 28 ÷ 6 = _____

Find quotient and remainder from the division of different numbers by 3.

9 10 ÷ 3 = ___ R____ 14 ÷ 3 = ___ R _____ 29 ÷ 3 = ___ R ___

16 ÷ 3 = ___ R ___ 47 ÷ 3 = ___ R ____ 31 ÷ 3 = ___ R ___

10 Is it possible to get a remainder 5 or 6 or 7 while dividing a number by 4? _____

11 What are the remainders that can be obtained while dividing a number by 6? Assume that a dividend is greater than 6. Give examples for each remainder.

_____ _____ _____

_____ _____ _____

REVIEW

When evaluating expressions, you don't always have to follow the order of operations strictly. Sometimes you can play around with the expression first. You can commute (with addition or multiplication), associate (with addition or multiplication), or distribute (multiplication or division over addition or subtraction).

Know your options!

12 Consider the expression:

$$(32 \times 4) \times (25 \times 10) \times (10 \times 2)$$

Using an associative property of the multiplication, it could be rewritten as the following expression:

$$32 \times (4 \times 25) \times (10 \times 10) \times 2$$

Q: Why is the 2nd grouping is more convenient than the 1st?

13 Compare, using <, >, or =. Use all properties of addition and multiplication.

a) $(8 + 5) - 7 \ldots (8 + 7) - 5$

b) $2 \times (3 + 4) \ldots (2 \times 3) + 4$

c) $(10 \times 5) \div 2 \ldots 10 \times (5 \div 2)$

***Special**: Fast mental calculation using a distributive property.*

New Material II

Any collection of things or objects we call a **"Set."**
Here are some examples:
- Set of all digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9
- Set of all days of the week.
- Set of all months.

A common property amongst the objects may define a set.
For example, the set E of positive even numbers is the set E={2, 4, 6, 8, 10…}.

There is a fairly simple notation for sets. We list each element (or "member") of the set separated by a comma and then put curly brackets around the whole thing:{1, 2, 3, …}.

1, 2, and 3 are "elements" or "members" of the set. Three dots means that it goes on forever.
This set is **infinite**. Not all sets are infinite.

For example, consider the set of all letters of the English alphabet: {a, b, c, ..., x, y, z}
In this case, it is a **finite** set (there are only 26 letters, right?)

When talking about sets, it is fairly standard to use Capital Letters to represent the name of the set, and lowercase letters to represent the elements in that set.
For example, **A** is a name of a set and ***a*** is an element in A. A= {a}.

14 Name the set that the following elements belong to.
Then name another element that belongs to the set.
Example: A rose, a tulip, a sunflower. This is a set of flowers and A rose, a tulip, a sunflower are the elements of this set. Another element of the set would be: a lily.

a) A mother, a baby, a father, a grandfather. Is a set of: _____.
Another element of the set is: _____.

b) Math, Science, English. Is a set of: _____.
Another element of the set is: _____.

c) A penny, a quarter, a nickel. Is a set of: _____.
Another element of the set is: _____.

d) A cucumber, a pepper, an onion. Is a set of: _____.
Another element of the set is: _____.

e) Come up with your own example of a set and its elements. A set of: _____.
The elements of the set are: _____

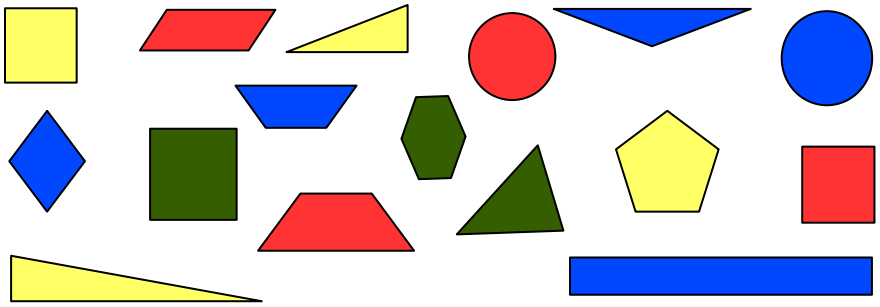
Sometimes we have sets which are different but still have some common elements.
For example - all flowers and white flowers or all fish and freshwater fish.

We illustrate relationship between various sets by using **Venn diagrams**: we draw all objects as points on the plane, and then we draw a loop (or some other shape) around all objects of a particular set.
Different loops correspond to different sets.

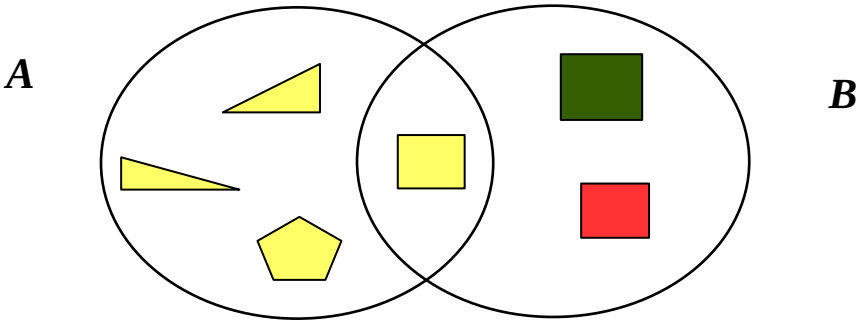
15 Let us sort those shapes out into different groups (sets).

a) Name different properties that can be used to sort the following shapes:

- _____
- _____
- _____



Look at the drawing below. All yellow shapes are in the set ***A;*** all squares are in the set ***B.***
Yellow squares form a set that belongs to both sets – ***A*** and ***B***.



b) In circle ***A*** place all red shapes (draw those shapes using red pencil)
In circle ***B*** place all circles. What shapes will be in the overlap of two sets ***A*** and ***B***?