

## 5<sup>th</sup> Grade Assignments – Week #8

**Note:** Just giving you time to make a purchase...At the beginning of the next quarter (starting Week #9), we will be working with measurement. In Week #10, we will make our own yard/meter stick. So you need to buy a blank one. As with a normal meter stick, it should be around 1 inch wide (2 or 3cm), and quite thin. I bought one at the hardware store made of balsa wood. You need to cut it to a length of 1 meter (39.4 inches). Further instructions will come in the Week #10 assignment.

**Group Assignment: *Puzzles!*** (for Tuesday or Thursday)

### 1. A Basket of Fruit

- Mary has a basket of cherries. If she counts them by 3's, she has 2 left over. If she counts them by 5's, she has 4 left over. How many cherries are there? (There is more than one possible answer.)
- John has a basket of apples. If he counts them by 3's, he has 1 left over. If he counts them by 4's, he has 3 left over. How many apples are there? (There is more than one possible answer.)

### 2. Sums and Differences

- Find two numbers that add to 24 and subtract to 2.
- Find two numbers that add to 53 and subtract to 13.

### 3. Products, Sums and Differences

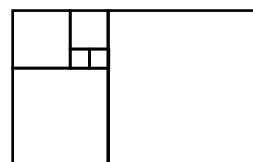
- Find two numbers that multiply to 80 and...
  - subtract to 2.
  - add to 21.
- Find two numbers that multiply to 120 and...
  - subtract to 37.
  - add to 29.

## Main Lesson Work (geometry – from **Lecture #1**)

- Practice!** (Not for ML Book) Spend a good amount of time practicing drawing an equilateral triangle in a circle, a square in a circle, a pentagon in a circle, and a hexagon in a circle.

- Title: **Spiral of Squares**

**Instructions:** Near the center of the page, draw two very small squares, side by side. Adjacent to those two squares, draw a new square on top of the first two, which has its side equal to the combined length of the first two squares. Keep adding more squares in counter-clockwise spiral manner, until it no longer fits on the page.



- Title: **Stars in a Circle**

**Instructions:** You can do as many of these drawings as you wish – each drawing on a separate page. You may have to practice it once or twice first before putting a final version into your main lesson book. I suggest doing them in this order: heptagon (7 points), octagon (8 points), hexagon (6 points), nonagon (9 points), decagon (10 points), dodecagon (12 points).

As I explained in the lecture, for each drawing, follow these steps:

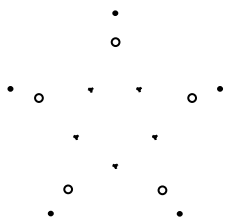
- Draw a large circle, and then evenly place the desired number of gems around the circle. Adjust the gems as needed. mark the center of the circle.
- Remove one gem at a time, marking a point on the circle where the gem was located.
- As I demonstrated in the lecture, draw the longest diagonals (that don't pass through the center of the circle) that connect all the points. It is best to do this in one connected motion so that you don't have to lift your pencil off the page. For which of these drawings is this not possible? (Answer: the hexagon (6 points) and decagon (10 points)...why isn't it possible with these two?)

## Main Lesson Work (geometry – from **Lecture #2**)

- *Practice drawing stars.* First practice drawing stars (with 5 points, 7 points, 9 points, and 8 points) inside circles, and then try doing it without the circles.
- *Main Lesson Book Page.* Title: **Hexagonal Net**
  - Follow the instructions I gave in the lecture.
- *Main Lesson Book Page.* Title: **Pentagonal Knot**
  - Follow the instructions I gave in the lecture, which I repeat below.
  - Instructions:  
Step #1: First draw a pentagon with a nested pentagram.

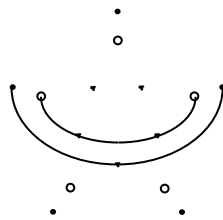
### Step #2

Add 5 new points slightly inside the pentagon. Mark all points, and erase all lines.



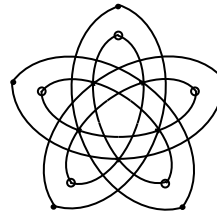
### Step #3

Picture two arcs, as shown below, then draw them lightly.



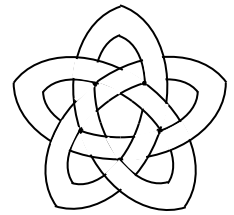
### Step #4

In the same manner, draw the rest of the arcs.



### Step #5

Erase intersection lines as needed, and color in.



Individual Work (non-geometry). Work on the following problems. Just do what you can!

1. Calculate  $\frac{7}{8} - \frac{1}{4}$
2. Calculate  $\frac{5}{13} + \frac{2}{13}$
3. Calculate  $\frac{2}{3} + \frac{4}{9}$
4. Calculate  $\frac{5}{12} + \frac{1}{10}$
5. Calculate  $\frac{11}{20} - \frac{7}{50}$
6. Reduce the fraction  $\frac{5}{15}$
7. Reduce the fraction  $\frac{12}{30}$
8. Reduce the fraction  $\frac{200}{350}$

Important Note for Parents/Teachers: When multiplying fractions, I don't introduce the trick called cross canceling until 6<sup>th</sup> grade. Therefore, we will always check to be sure our fractions are reduced after multiplying. For example:

$$\frac{4}{5} \times \frac{5}{8} \rightarrow \frac{20}{40} \rightarrow \frac{1}{2}$$

With each of the below problems, multiply the two fractions using the shortcut that we have learned. Be sure that your final answer is a reduced fraction!

9.  $\frac{4}{5} \times \frac{1}{7}$
10.  $\frac{2}{3} \times \frac{1}{7}$
11.  $\frac{5}{11} \times \frac{3}{10}$
12.  $\frac{3}{8} \times \frac{20}{21}$

Solve the following problems.

13.  $132 \times 54$
14.  $627 - 356$
15.  $682 - 286$
16.  $8506 - 2668$
17. Look for sums of ten in each column!  
3741  
628  
1925  
8632  
6174  
+ 4406
18. *Challenge!*  $6,023 \times 467$