5th Grade Assignments – Week #7

Group Work (For Tuesday)

- Note for the parents/teachers: My hope is that with the following problems, the students will be guided to discover the "trick" for multiplying fractions. In this case, I don't want them to get caught up in the logic, as it gets quite confusing and can cause unhelpful frustration. If they see the trick – then celebrate!
- Note also that it is a poor practice to draw the fraction bar slanted; it should always be written horizontally. Example: You should write ⅓ as $\frac{1}{3}$. So be sure when you write out the below problems for the children, draw the fraction bars horizontally.

1. ¼ x 20
2. ⅓ x 18
3. $^1/_6$ x 30
4. ½ x ¼
5. ½ x ⅓
6. ⅓ x $^1/_5$
7. ¼ x $^1/_7$
8. $^1/_9$ x $^1/_{11}$
9. $^1/_5$ x 35
10. $^2/_5$ x 35
11. $^1/_{10}$ x 60
12. $^3/_{10}$ x 60
13. ¼ x $^1/_5$
14. ¾ x $^1/_5$
15. $^1/_7$ x ½
16. $^5/_7$ x ½

Hopefully they now see the trick, and can then make a good guess at the following problems:

17. ⅔ x $^4/_5$
18. ¾ x $^3/_5$
19. $^2/_7$ x $^3/_{11}$

Puzzles!

1. If Jill subtracts 7 from her favorite number, multiplies by 10, and adds 7, the result is 47. What is her favorite number?
2. If Jay adds 16 to his favorite number, cuts it in half, divides by 5, and subtracts 2, the result is 1. What is his favorite number?

Main Lesson Work (geometry) – **Pages coming out of Lecture #1**

(For those who are doing the Freehand Geometry main lesson.)

What is listed below are suggestions for drawings. You should feel free to vary things, and make up your own drawings entirely. As always, the goal should be quality rather than quantity.

Each drawing should be done beautifully using colored pencils. While there is no way correct way to use color, be mindful that the color should simply emphasize the form. Generally, unnecessary embellishments should be avoided.

- Title: **Tangent Circles**

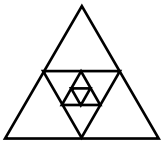
Instructions: Draw a large circle, and then draw a second circle inside the first one, which is about two-thirds as large and tangent at the bottom. Draw a third circle, tangent to the first two circles, located directly above the second circle. Draw a fourth circle (to the right of circle #3) which is tangent to the first three circles. Continue adding more circles that are tangent to the first two circles and the previously drawn circle. Then fill in tangent circles so that the left side is the same as the right side. Lastly, color it in beautifully so that circles of the same size are in the same color.

Extra Drawing: Redo the same drawing, but have the second circle slightly less than half the size as the first circle, and therefore somewhat smaller than the third circle.

- Title: **A Crown of Triangles**

Instructions: Draw a large circle. Starting at the top of the circle, place nine small gems (or stones) along the circle so that they are evenly spaced. One at a time, remove a gem and lightly mark where the gem was. Draw an isosceles triangle where its base connects the lowest two points on the circle and the apex is at the top of the circle. Now draw the remaining six triangles so that they all have the same base, but a different apex. Lastly, color it in beautifully so that triangles of the same size are in the same color.

- Title: **Nested Triangles**



Instructions: Draw an equilateral triangle inside a large circle. Inside that triangle, draw a second triangle which has its three points at the midpoints of the three sides of the first triangle. Keep adding more equilateral triangles inside one another. Color in beautifully!

Group Assignment (for Thursday): Puzzles!

- If you didn't finish the puzzles given in the previous group assignment, then do that now.

1. Mark has twice as many pets as Jen. If they have 15 pets together, how many pets does Jen have?
2. Iris has twice as many pets as Lizzy. Lizzy, Naomi, and Iris have a total of 14 pets between them. If Iris has 6 pets, how many pets does Naomi have?
3. Two popsicles and one candy bar cost $2.10. One of each costs $1.45. What does a candy bar cost?

Main Lesson Work (geometry) – **Pages coming out of Lecture #2 (Week #7)**

(For those who are doing the Freehand Geometry main lesson.)

What is listed below are suggestions for drawings. Remember that the theme throughout this main lesson is: form in movement. You should feel free to vary things, and make up your own drawings entirely. Be sure that it doesn't become overwhelming. As always, the goal should be quality rather than quantity.

Each drawing should be done beautifully using colored pencils. While there is no way correct way to use color, be mindful that the color should simply emphasize the form. Generally, unnecessary embellishments should be avoided.

- Title: **The Pentagon with its Inscribed Pentagram**
  Instructions: Follow the instructions I gave in the lecture.
- Title: **The Theorem of Thales**
  Instructions: Follow the instructions I gave in the lecture.
- Title: **Nested Squares with Spirals**
  Instructions: Follow the instructions I gave in the lecture.

Individual Work (non-geometry)

Work on the following problems. Just do what you can!

1. Calculate $\frac{15}{16} - \frac{7}{16}$
2. Calculate $\frac{5}{6} - \frac{1}{2}$
3. Calculate $\frac{2}{3} - \frac{1}{12}$
4. Calculate $\frac{3}{10} + \frac{1}{6}$
5. Calculate $\frac{11}{20} + \frac{5}{8}$
6. Reduce the fraction $\frac{4}{8}$
7. Reduce the fraction $\frac{8}{12}$
8. Reduce the fraction $\frac{14}{35}$
9. What is $18 \div 6$?
10. What is $\frac{1}{6}$ of 18?
11. What is $\frac{1}{6}$ x 18?
12. What is $\frac{5}{6}$ of 18?
13. What is $\frac{5}{6}$ x 18?
14. What is $\frac{1}{8}$ x 24?
15. What is $\frac{3}{8}$ x 24?
16. What is $\frac{2}{5}$ x 25?
17. What is $\frac{1}{3}$ of $\frac{1}{2}$?
18. What is $\frac{1}{5}$ of $\frac{1}{3}$?
19. What is $\frac{1}{3}$ of $\frac{1}{5}$?
20. What is $\frac{1}{3}$ x $\frac{1}{5}$?
21. What is $\frac{2}{3}$ x $\frac{1}{5}$?
22. What is $\frac{1}{4}$ x $\frac{1}{6}$?
23. What is $\frac{3}{4}$ x $\frac{1}{6}$?
24. What is $\frac{3}{5}$ x $\frac{1}{7}$?

Solve the following problems.

25. 57x82
26. Look for sums of ten in each column!

    8363
    8547
    3751
    6546
    5029
    + 262

27. *Challenge!* 25,318x93