Cabri Jr. Investigation for Section 5.2

- Create a rectangle by constructing a pair of parallel lines. (Use horizontal lines for this activity.)
- Draw a triangle by using one parallel line for two of the vertices and the other line for the third vertex.
- Move the third vertex along the parallel line. Make a conjecture as to what you think happens to the area of the triangle as that point is moved.

- After making your conjecture:
  - Measure the base of the triangle.
  - Measure the height of the triangle.
  - Measure the area of the triangle.

- Move the third vertex along the parallel line. Do your results confirm your conjecture?

- Complete Activity 2, *The Area Formula for Parallelograms*, p. 305.

Practice for the Instructional Guide Lesson on Radicals. (Using a calculator)

Use a calculator to approximate the following. Decimals should be rounded to three decimal places.

1. $\sqrt{35}$ 2. $\sqrt{240}$ 3. $\sqrt{24.6}$ 4. $\sqrt{\frac{3}{5}}$

In problems 5-10, estimate the value of the expression before using the calculator. If your estimate is much different than your calculator approximation, check how you used parentheses to enter the expression in your calculator.

5. $\frac{\sqrt{63}}{2}$ 6. $\frac{12}{\sqrt{5}}$ 7. $5+\sqrt{48}$

8. $2\sqrt{15}-\sqrt{5}$ 9. $\frac{6+\sqrt{17}}{3}$ 10. $\frac{4}{2+\sqrt{37}}$

Investigation for the Instructional Guide Lesson on Simplifying Radicals. (Product and Quotient Properties)

Use your calculator to evaluate the following pairs of expressions.

1.	$\sqrt{36 \cdot 4}$	$\sqrt{36} \cdot \sqrt{4}$
2.	$\sqrt{25 \cdot 9}$	$\sqrt{25} \cdot \sqrt{9}$
3.	$\sqrt{\frac{100}{4}}$	$\frac{\sqrt{100}}{\sqrt{4}}$
4.	$\sqrt{\frac{400}{100}}$	$\frac{\sqrt{400}}{\sqrt{100}}$
5.	$\sqrt{16+9}$	$\sqrt{16}+\sqrt{9}$
6.	$\sqrt{49+576}$	$\sqrt{49}+\sqrt{576}$
7.	$\sqrt{289-225}$	$\sqrt{289}-\sqrt{225}$
8.	$\sqrt{25-16}$	$\sqrt{25}-\sqrt{16}$

Based on the answers above, fill in the blank with = or $\neq$ to complete each conjecture.

$\sqrt{a \cdot b}$ _____ $\sqrt{a} \cdot \sqrt{b}$

$\sqrt{\frac{a}{b}}$ _____ $\frac{\sqrt{a}}{\sqrt{b}}$

$\sqrt{a+b}$ _____ $\sqrt{a}+\sqrt{b}$

$\sqrt{a-b}$ _____ $\sqrt{a}-\sqrt{b}$

Practice for the Instructional Guide Lesson on Simplifying Radicals (Whole Number Radicand)

Write in simplest form.

1. $\sqrt{12}$

2. $\sqrt{50}$

3. $\sqrt{24}$

4. $\sqrt{125}$

5. $\sqrt{700}$

6. $\sqrt{90}$

7. $\sqrt{98}$

8. $\sqrt{48}$

9. $\sqrt{52}$

10. $\sqrt{120}$

Practice for the Instructional Guide Lesson on Radicals. (Rationalizing the Denominator)

Rationalize the denominator. Make sure that all radicals in your final answer are in simplest form. Use your calculator to confirm that your simplified answer is equal to the value of the original problem.

1. $\frac{6}{\sqrt{7}}$

2. $\frac{1}{\sqrt{3}}$

3. $\frac{4}{\sqrt{6}}$

4. $\frac{5}{\sqrt{10}}$

5. $\frac{2}{\sqrt{2}}$

6. $\frac{3}{\sqrt{5}}$

7. $\frac{1}{\sqrt{8}}$

8. $\frac{3}{\sqrt{12}}$

9. $\frac{8}{\sqrt{2}}$

10. $\frac{15}{\sqrt{10}}$

Practice for the Instructional Guide Lesson on Radicals. (Product and Quotient Properties of Square Roots)

Use the Product and Quotient Properties of Square Roots. Evaluate the following products and quotients. Make sure your answer is in simplest form.

1. $\sqrt{5} \cdot \sqrt{7}$

2. $\sqrt{6} \cdot \sqrt{3}$

3. $\sqrt{8} \cdot \sqrt{2}$

4. $\sqrt{10} \cdot \sqrt{5}$

5. $\left(2\sqrt{3}\right)\left(5\sqrt{7}\right)$

6. $\dfrac{\sqrt{44}}{\sqrt{2}}$

7. $\dfrac{\sqrt{40}}{\sqrt{5}}$

8. $\dfrac{\sqrt{18}}{\sqrt{2}}$

9. $\dfrac{\sqrt{500}}{\sqrt{50}}$

10. $\dfrac{12\sqrt{30}}{4\sqrt{6}}$

Practice for the Instructional Guide Lesson on Radicals (Fractional Radicands)

Simplify the following radicals.

1. $\sqrt{\frac{7}{10}}$

2. $\sqrt{\frac{1}{6}}$

3. $\sqrt{\frac{10}{15}}$

4. $\sqrt{\frac{5}{8}}$

5. $\sqrt{\frac{20}{40}}$

Investigation for Section 5.5 (Equilateral triangle is on the following page)

- Use the equilateral triangle that is distributed to you
- What do we know about the angles of an equilateral triangle?

- Fold the triangle along its angle bisector so two congruent triangles are formed.
- Complete the following:

The angle bisector is also the _____ _____ *of the opposite side.*

- Why are the two triangles formed congruent? Use mathematics to justify your answer.

- What are the angle measures of each congruent triangle?

- What is the relationship between the length of the side opposite the 30 degree angle and the hypotenuse?

- Is this relationship true for any 30-60-90 right triangle? Justify your answer.

- Complete the activity on page 333, *30-60-90 triangles*.

- Prove the conjecture made at the end of the activity.