Unit 11 Notes
Rational and Irrational Numbers
Pythagorean Theorem

Tentative Schedule

Day	Classwork	Assignment
Thurs. 5/30	Rational vs. Irrational Numbers	Study the first 15 perfect squares
Fri. 5/1 Mon. 5/4	**Quiz on Perfect Squares** Simplifying Radicals	None
Tues. 5/5	Work on P.S. #11.1	Finish P.S. #11.1
Wed. 5/6 Thurs. 5/7	Pythagorean Theorem	P.S. #11.2
Fri. 5/8	Applications of Pythagorean Theorem	P.S. #11.3
Mon. 5/11 Tues. 5/12	Distance Formula	P.S. #11.4
Wed. 5/13	Review Game	Review for Quest #11
Thurs. 5/14 Fri. 5/15	**Quest #11**	Begin Polynomials Unit

Name: _____

Notes 11.1 – Rational vs. Irrational and Simplifying Radicals

Fill in the following chart.

$1^2 =$	$2^2 =$	$3^2 =$	$4^2 =$	$5^2 =$
$6^2 =$	$7^2 =$	$8^2 =$	$9^2 =$	$10^2 =$
$11^2 =$	$12^2 =$	$13^2 =$	$14^2 =$	$15^2 =$

Evaluate the following.

1.) $\sqrt{81}$ 2.) $\sqrt{25}$ 3.) $\sqrt{49}$ 4.) $\sqrt{225}$ 5.) $\sqrt{169}$

6.) $\sqrt{-81}$ 7.) $-\sqrt{25}$ 8.) $\sqrt{-49}$ 9.) $\sqrt{-225}$ 10.) $-\sqrt{169}$

Rational Numbers	Irrational Numbers
Definition	**Definition**
Examples	**Examples**

Identify whether the numbers below are rational or irrational. Explain why.

11.) 4   12.) π   13.) $\sqrt{25}$

14.) $\sqrt{11}$ 15.) $-\dfrac{2}{3}$ 16.) $\dfrac{3}{5}$

17.) 3.14   18.) $-1,234,567$ 19.) 1.10110111011110…

Simplifying Radicals

To Simplify Radicals	Example: $\sqrt{80}$
1. Factor the number under the radical sign, if possible, so that one of its factors is the *largest possible* perfect square.	1.
2. You are allowed to split up a radical sign if there is multiplication underneath it.	2.
3. Evaluate the square root of the perfect square and leave the other factor underneath the radical sign.	3.

Simplify the radicals below:

20.) $\sqrt{200}$

21.) $\sqrt{32}$

22.) $\sqrt{17}$

23.) $\sqrt{81}$

24.) $\sqrt{52}$

25.) $5\sqrt{24}$

26.) $\dfrac{\sqrt{20}}{2}$

27.) $\sqrt{27x^3}$

28.) $\sqrt{44u^5}$

Notes 11.2 - Pythagorean Theorem

Solve the following equations.

1.) $x^2 = 16$

2.) $a^2 = 9$

Right Triangles	
Definition:	Drawing:

In order for a triangle to be a right triangle, it has to satisfy the following equation:

This is called the _____ _____.
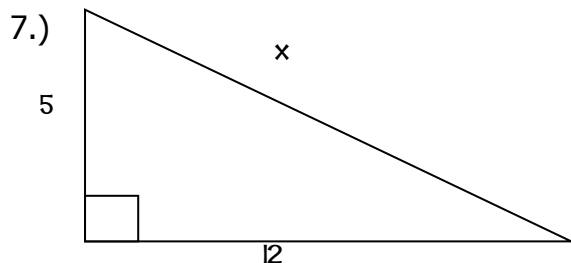
Indicate whether the following are right triangles:
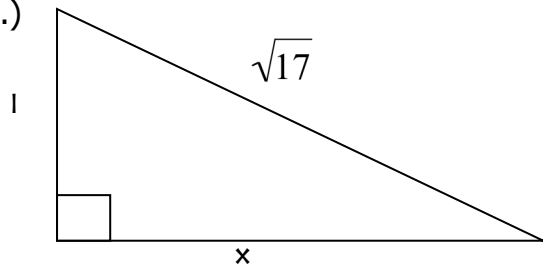
3.)   3,4,5
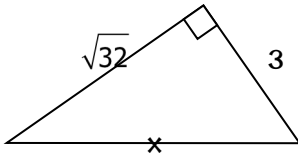
4.)   5,7,13

5.) $3, \sqrt{27}, 6$

6.)   2,4,9

Find the missing sides in the following right triangles.

7.)

x

5

12

8.)

9.)

10.) A 5-foot ladder rests against a 4-foot vertical wall. How far away from the wall is the foot of the ladder? **Draw a picture.**
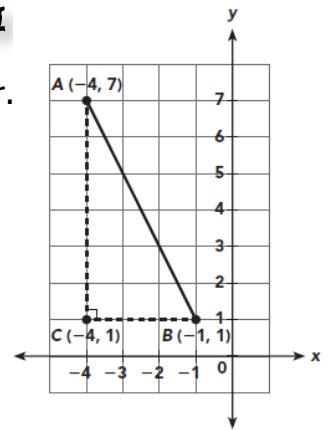
Notes 11.3 - Applications of Pythagorean Theorem

Find the length of the longest pole that will fit inside a truck trailer. A truck is 6 m x 2 m x 3 m.
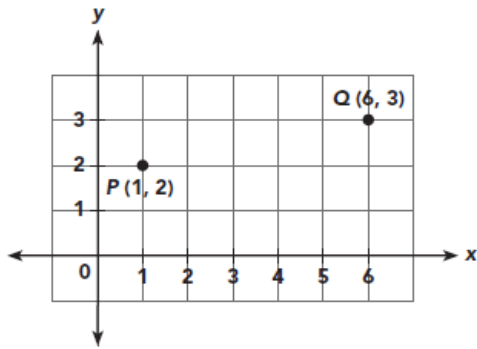
Notes 11.4 - Distance Formula

1.) Find the distance of all three sides of the triangle. Simplify the answer.

A (−4, 7)
C (−4, 1)   B (−1, 1)

2.) Points P (1, 2) and Q (6, 3) are plotted on a coordinate plane. Find the distance between points P and Q. Round your answer to the nearest tenth.

Q (6, 3)
P (1, 2)

The Distance Formula:

3.) Find the lengths of all three sides of the triangle. Simplify the radical, if possible.

B (0, 3)
A (4, 1)
C (3, −4)