

Alg. I-BE TUESDAY 3-13-12

①  $2\sqrt{3} + 3\sqrt{2} - \sqrt{3} + 4\sqrt{2} = ?$

②  $(6\sqrt{5})^2 = ?$

③ SOLVE:  $\sqrt{4x-3} = 6-x$

④ LIST THE SIX EXPONENT RULES  
AND GIVE EXAMPLES OF EACH RULE.

⑤  $(x^5)(x^8)(x^3) = ?$

⑥  $\frac{x^8}{x^5} = ?$

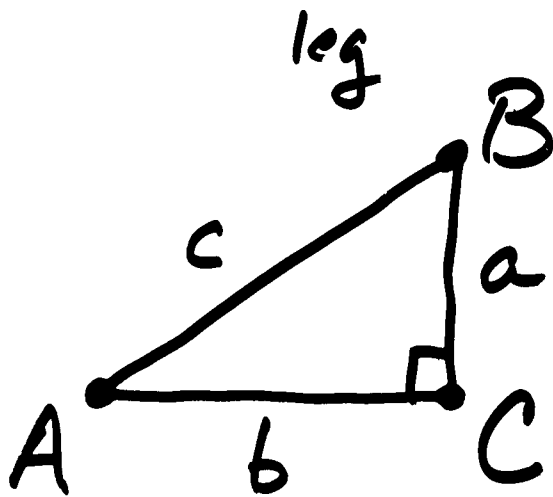
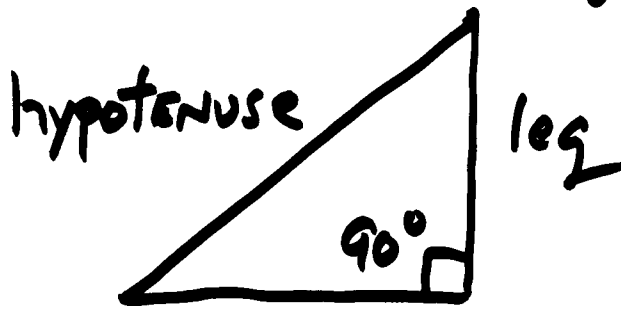
⑦  $\frac{x^5}{x^8} = ?$

⑧  $2^{-3} = ?$

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Homework review: Pg. 601 #17-19, 26-28,  
33, 35-37.

# THE VOCABULARY OF A RIGHT $\Delta$



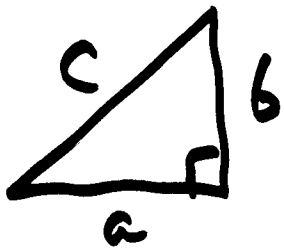
a, b, c are the sides,  
units are length

A, B, C are the angles,  
units are degrees.

- $\angle C$  is always the  $90^\circ$  angle
- side c is always the side opposite the  $90^\circ$  angle
- $\angle C$  is the biggest angle
- side c is the biggest side
- $m\angle A + m\angle B = 90^\circ$      $m\angle C = 90^\circ$
- a is opposite A, b is opposite B

In any right triangle:

The square of the hypotenuse  
 Equals the sum of the squares  
 of the other two sides.



$$c^2 = a^2 + b^2$$

↑  
 THE SQUARE  
 OF THE  
 hypotenuse

↑  
 THE SUM OF THE  
 SQUARES OF THE  
 OTHER 2 sides

## Pythagorean Theorem

Pythagoras ~ lived around 500 BC

~ MAY HAVE BEEN 1<sup>st</sup> to  
 prove theorem. It was known  
 to Babylonians ~ 1000 years

\* EVERYTHING  
 WAS SECRET  
 ∴ all info. lost!

earlier!  
 ~ Greek, school of math ~ a religion

CH. 11-4 THE PYTHAGOREAN THEOREM 3.

EX 1  
Pg 605

Find the hypotenuse if

$$a = 8 \quad b = 15$$

$$c^2 = a^2 + b^2$$

$$c^2 = 8^2 + 15^2$$

$$c^2 = 64 + 225$$

$$c^2 = 289$$

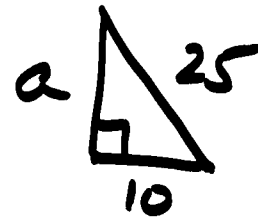
$$\sqrt{c^2} = \sqrt{289}$$

Discard - root,  
why?

$$c = 17 \text{ units}$$

EX 2  
Pg 606

Find missing side



$$c^2 = a^2 + b^2$$

$$25^2 = a^2 + 10^2$$

$$625 - 100 = a^2$$

$$\sqrt{525} = a$$

$$\sqrt{25} \sqrt{21} = a \therefore$$

$$a = 5\sqrt{21} \text{ EXACT}$$
$$a \approx 22.9 \text{ APPROXIMATE}$$

If you want  $c$ , use  $c^2 = a^2 + b^2$

" " "  $b$ , use  $b^2 = c^2 - a^2$

" " "  $a$ , use  $a^2 = c^2 - b^2$



Notice  $c^2$  is  
Always first. Since  
it is biggest it  
must be first to  
avoid a negative  
distance!!!

In some RARE cases, the sides of  
A right triangle are integers. These  
sides are called Pythagorean Triples.

One known to ALL carpenters is  
A (3, 4, 5) or its double  $\Rightarrow$  (6, 8, 10)  
Which side is the hypotenuse?????

Other common Pythagorean Triples are  
(5, 12, 13), (8, 15, 17), and (7, 24, 25)

EX 4  
PG 607

Determine if the following sides can form a right triangle:

Ⓐ (20, 21, 29)

↑  
HYPOTENUSE

$$29^2 \stackrel{?}{=} 20^2 + 21^2$$

$$841 \stackrel{?}{=} 400 + 441 \quad \checkmark$$

YES  
A RIGHT  $\Delta$

Ⓑ (8, 10, 12)

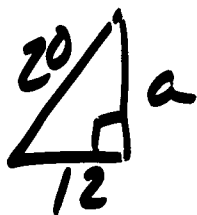
↑  
HYPOTENUSE

$$12^2 \stackrel{?}{=} 8^2 + 10^2$$

$$144 \stackrel{?}{=} 64 + 100$$

NO, NOT A  
RIGHT  $\Delta$

EX 3  
PG 606

Area of 

$$a^2 = 20^2 - 12^2 = 400 - 144 = 256$$

$$a = 16 \quad \therefore A = \frac{1}{2} b h = \frac{1}{2} \cdot 12 \cdot 16$$

$$A = 96 \text{ units}^2$$

Homework: ① Read CH 11-4

② # 13-37 Every 3<sup>rd</sup>, i.e. 13, 16, 19, ...

③ Memorize the 6 exponent rules!