Lesson 10-1

2/24/11 Squares & Square Roots (p 537-542)

$\sqrt{\ }$ Radical Sign: used to indicate a positive square root.

Every positive number has negative and a positive square root.

Square Root: the opposite of squared. the square root of a number is one of its two equal factors.

Since $6^2 = 36$, then the $\sqrt{36} = \pm 6$

6, -6

ex) $\sqrt{9} = 3, -3$ or ± 3

ex) $-\sqrt{64} = -8$

ex) $\pm\sqrt{4}$

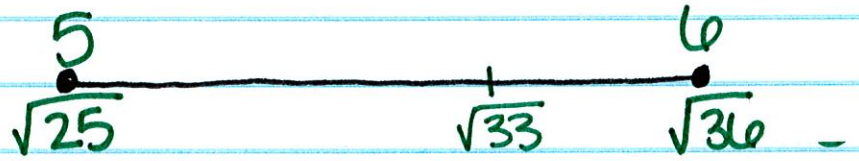
$+\sqrt{4} = 2 \quad -\sqrt{4} = -2$

± 2

ex) $\sqrt{-81}$ = no real square root. because no ## times itself equals -81.

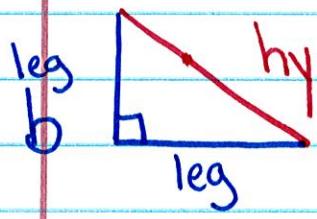
Estimate each square root to the nearest integer.

ex) $\sqrt{33}$ $\boxed{6}$



Lesson 10-4

2/25/11 The Pythagorean Theorem (p558-563)



The Pythagorean Theorem

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

In a right triangle, the sum of the squares of the legs is equal to the square of the hypotenuse

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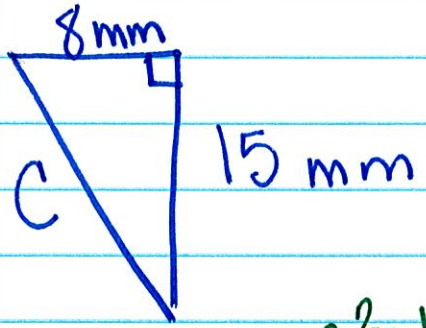
ex:



$a^2 + b^2 = c^2$ ① Write the formula

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

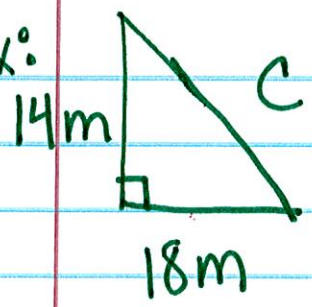
$64 + 225 = c^2$ ② Substitute & show work if necessary

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

$17.0 = c$

mm ③ Solve * label

ex:



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

$14^2 + 18^2 = c^2$

$196 + 324 = c^2$

$\sqrt{520} = \sqrt{c^2}$

$\boxed{22.8 \text{ m} = c}$

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ex: $a = 9$ $b = 38$ $c = 39$

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

$9^2 + 38^2 = 39^2$

$81 + 1{,}444 = 1{,}521$

$1{,}525 \neq 1{,}521$ No

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ex: $a = 14$, $b = ?$, $c = 22$

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

$14^2 + b^2 = 22^2$

$196 + b^2 = 484$

$-196 \quad -196$

$\sqrt{b^2} = \sqrt{288}$

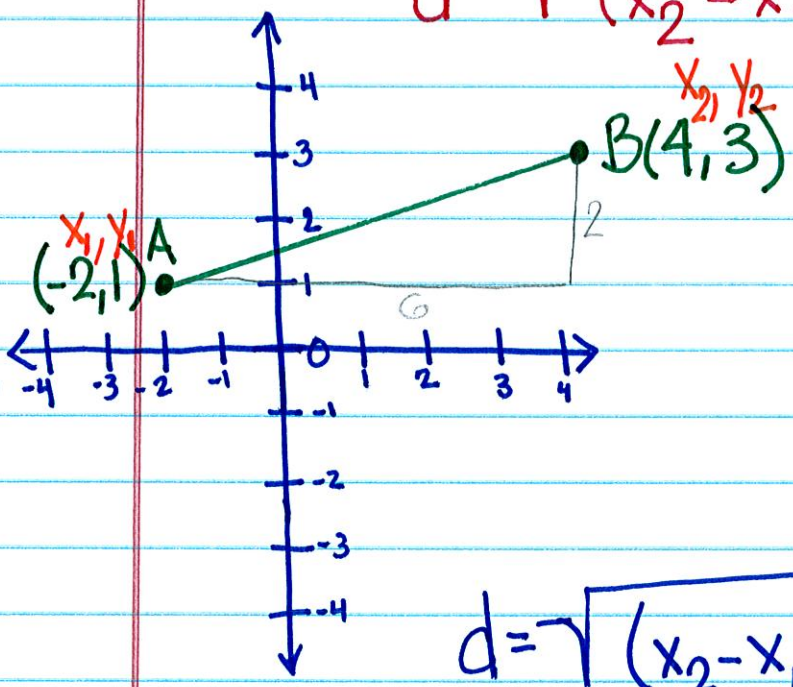
$b = 17.0$

Lesson 10-5

3/1/11 **The Distance Formula** (p 567-570)
(based on the Pythagorean Thm)

The Distance Formula: the distance d between any two points on a graph

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(4 - -2)^2 + (3 - 1)^2}$$

$$d = \sqrt{(6)^2 + (2)^2}$$

$$d = \sqrt{36 + 4}$$

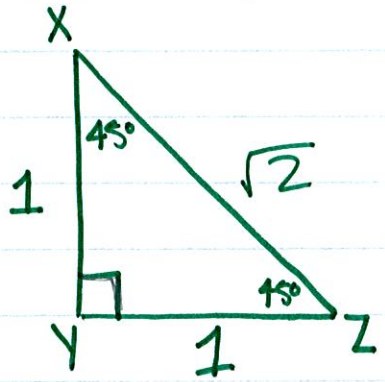
$$d = \sqrt{40}$$

$$d \approx 6.3$$

masters copy Thursday

Lesson 10-6

3/1/11 Special Right Triangle (p571-576)



① "how many degrees in a triangle?"

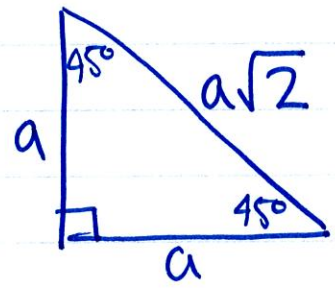
② Place right angle symbol
↳ "if I have an angle this big, what do I know about the others"

③ "Now what if I tell you this is an isosceles triangle" - angles then sides

$$a^2 + b^2 = c^2$$
$$(1)^2 + (1)^2 = c^2$$
$$1 + 1 = c^2$$
$$2 = c^2$$
$$\sqrt{2} = c$$

45°-45°-90° triangles

hyp = leg × √2



-- so it doesn't look like it's under the radical

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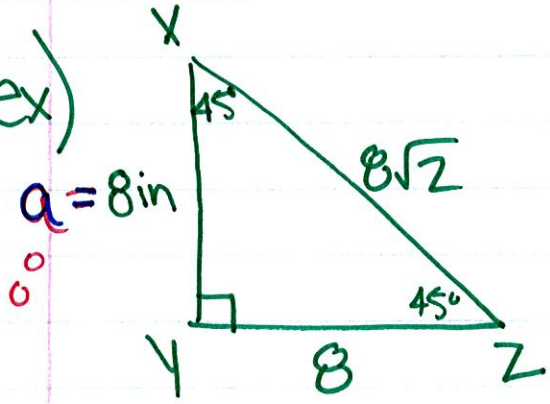
ex)

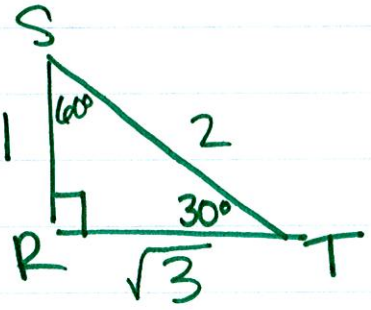


a = 8in

$\overline{XZ} = 8$ in.

$XZ = a\sqrt{2}$

$= 8\sqrt{2}$ in.



① give ∟ & ∠30 -- ask what remainder ∠ will be

② give 30° side & hyp.

SR = 1

ST = 2

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

$(1)^2 + b^2 = (2)^2$

$1 + b^2 = 4$

$-1 \quad -1$

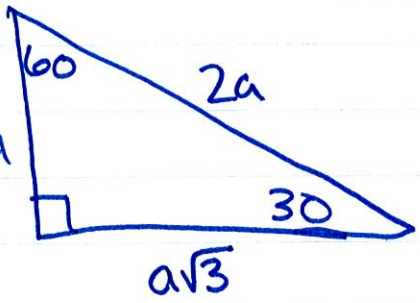
$b^2 = 3$

$b = \sqrt{3}$

30° 60° 90° Triangle

hyp. = 2 • shorter leg

longer leg = shorter leg × $\sqrt{3}$



* arm @ 30° & 60°

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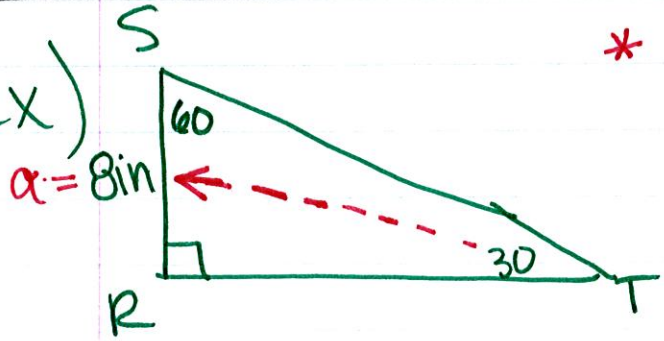
ex)



* identify the shortest side first.
  ↳ opposite the 30° angle

RT = $a\sqrt{3}$

$8\sqrt{3}$ in

ST = 2a

2(8)

16 in