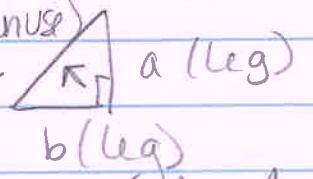
10.1 Pythagorean Theorem

* Bell Ringer - "Solve It - Getting Ready"
Area of House

A	B	C
$A = s^2$	$A = s^2$	$A = s^2$
$A = 120^2$	$A = 50^2$	$A = 130^2$
$A = 14{,}400\ ft^2$	$A = 2{,}500\ ft^2$	$A = 16{,}900\ ft^2$

* Pythagorean Theorem - for any right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse

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



(*) hypotenuse is always the longest length

* Review Problem 1 on pg. 615

* Got it? #1

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

$9^2 + 12^2 = c^2$

$81 + 144 = c^2$

$225 = c^2$

$\sqrt{225} = \sqrt{c^2}$

$c = \pm 15$

* Only the positive answer is reasonable 15 cm.

* Problem 2 on pg. 615

* Got it? #2) $a^2+b^2=c^2$

$a^2+12^2=15^2$

$a^2+144=225$

$a^2=81$

$a=\pm 9$

$a=9$

* "If/then" statements are called conditional because it has 2 parts.
* "If" is the hypothesis & "then" is the conclusion.
* The converse of a conditional switches the hypothesis & the conclusion. Pythagorean Theorem is an example of a conditional.

* The converse of the Pythagorean Theorem states that if $a^2+b^2=c^2$, then the triangle is right.

* Review Problem 3

* Got it #3?

A) $20^2+47^2=52^2$

$400+2209=2704$

$2609 \neq 2704$

NO

B) $(2a)^2+(2b)^2=(2c)^2$

$4a^2+4b^2=4c^2$

$4(a^2+b^2)=4c^2$

Yes this is equivalent to $a^2+b^2=c^2$

10.1 pg. 617 #4-28 every other even, 30-42 even

4) If you are a student, then you study math

8) $a^2+1^2=\left(\frac{5}{4}\right)^2$

$a^2+1=\frac{25}{16}$

$a^2=\frac{25}{16}-\frac{16}{16}$

$a^2=\frac{9}{16}$

$a=\frac{3}{4}$

12) $1^2+b^2=\left(\frac{5}{3}\right)^2$

$1+b^2=\frac{25}{9}$

$b^2=\frac{25}{9}-\frac{9}{9}$

$b^2=\frac{16}{9}$

$b=4/3$

16) $8^2+b^2=17^2$

$64+b^2=289$

$b^2=225$

$b=15$

20) $(0.9)^2+b^2=(4.1)^2$

$.81+b^2=16.81$

$b^2=16$

$b=4$

24) $12^2+60^2=61^2$

$144+3600=3721$

$3744\neq3721$

NO

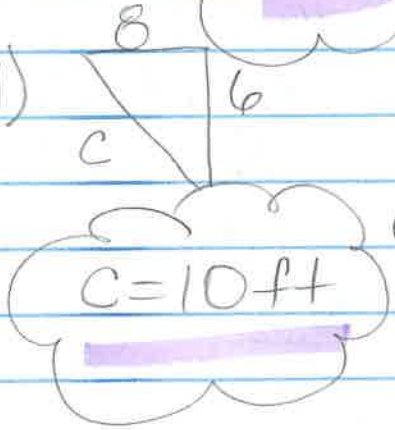
28) $16^2+30^2=34^2$

$256+900=1156$

$1156=1156$

Yes

29)



3, 4, 5

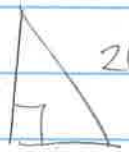
6, 8, 10

c = 10 ft

30) 11, 60, 61 Yes

32) 40, 41, 58 NO

34) 32, 126, 130 Yes

36) 

$26^2 = 10^2 + b^2$
$676 = 100 + b^2$
$576 = b^2$
$b = 24$

$A = \frac{1}{2}bh$
$= \frac{1}{2}(10)(24)$
$= 120 ft^2$

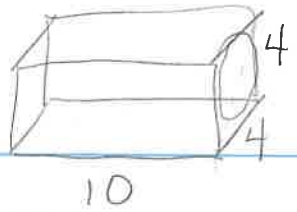
38) 

B)
$10^2 + 8^2 = c^2$
$100 + 64 = c^2$
$164 = c^2$
$c = 12.8$

OR

$10^2 = a^2 + 8^2$
$100 = a^2 + 64$
$a^2 = 36$
$a = 6$

B) 12.8 OR 6

40) 

$4^2 + 4^2 = c^2$
$16 + 16 = c^2$
$32 = c^2$
$c = 5.65$
5.7cm

* The length of the box does not matter

42) $x^2 + (x+1)^2 = (x+2)^2$
$x^2 + x^2 + 2x + 1 = x^2 + 4x + 4$
$x^2 - 2x - 3 = 0$
$(x+1)(x-3) = 0$
$x = -1, \ x = 3$
* cannot have a (-) distance
3, 4, 5

a) You don't know if the give information are 2 legs or 1 leg & the hypotenuse