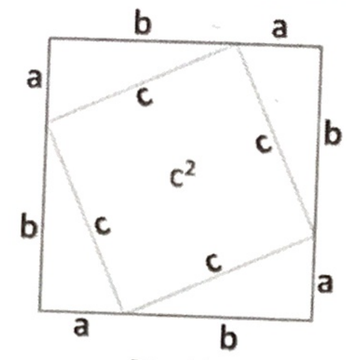
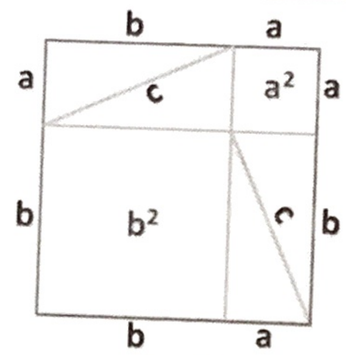
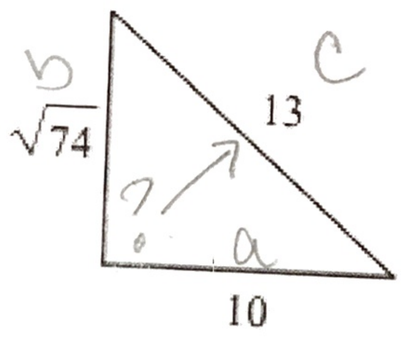
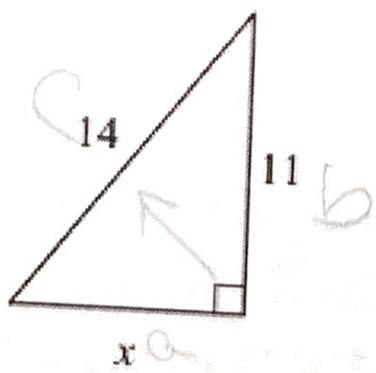
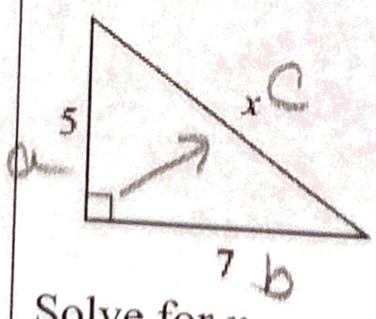
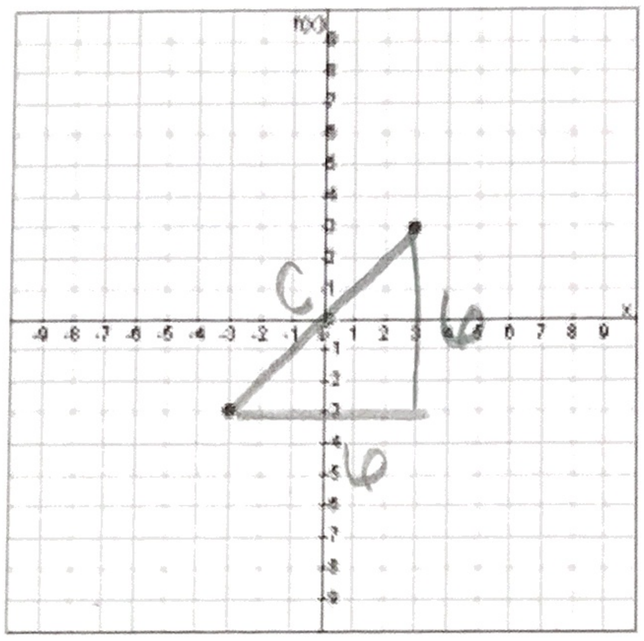
PYTHAGOREAN THEOREM AND TYPES OF NUMBERS PART 1

UNIT 4 TARGETS

See following pages for work

SKILL	EXAMPLE	I THINK I WILL GET A...	ACTUAL TEST SCORE
I can solve an equation requiring a square root.	Solve. $a^2 + 9 = 25$ $a = 4$		
I can explain a proof of the Pythagorean theorem.	 Figure 4-A  Figure 4-B How does the picture above prove the Pythagorean Theorem?		
I can use the converse of the Pythagorean theorem to tell if a triangle is a right triangle.	 Tell whether the triangle is a right triangle or not. No it is not.		
**** I can find the length of a missing leg of a right triangle.**	 Solve for x. Give an exact and approximate answer. $x = \sqrt{75}$ $x \approx 8.66$		
**** I can find the hypotenuse of a right triangle given the two legs.**	 Solve for x. $x = \sqrt{74}$ $x \approx 8.60$		

**** I can apply the Pythagorean Theorem given a word problem.**	Two joggers run 8 miles north and then 5 miles west. What is the shortest distance, to the nearest tenth of a mile, they must travel to return to their starting point?	9.4 miles	
I can find the distance between two points on the coordinate plane using the Pythagorean theorem.	4. $(-3,-3)$ and $(3,3)$  Determine the distance between the given points. Give an exact and approximate answer.	$6^2+6^2=c^2$ $36+36=c^2$ $\sqrt{72}=\sqrt{c^2}$ $c=\sqrt{72}$ exact $c\approx 8.49$ approx	

REFLECTION:

5.0	Clearly and accurately shows understanding with no conceptual errors in reasoning or conclusions.
4.5	Clearly and accurately shows understanding with only calculation and/or copy errors.
4.0	Correct answer with no support Or One minor error in reasoning demonstrated.
3.5	Several minor errors in reasoning or conclusions
3.0	Shows some understanding but makes major errors in reasoning or conclusions.
2.5	Some mathematical effort is made but shows little understanding.
2.0	No Attempt or irrelevant answer

Solve

Solve $a^2 + 9 = 25$

$-9 \quad -9$

$\sqrt{a^2} = \sqrt{16}$

$\boxed{a = 4}$

Use pic to prove:

Explain

The Pythagorean Theorem says for right Δ's, $a^2 + b^2 = c^2$.
All the Δ's in the picture are identical right Δ's. I know they are right Δ's b/c the sides are vertical & horizontal.
In the left pic. is 4 rt Δ's & c^2.
In the right pic is 4 rt Δ's & a^2 & b^2.
b/c the Δ's are identical you can subtract them & it leaves c^2 is a^2 and b^2 together

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

Converse

$a^2 + b^2 = c^2$ a is 10 b is $\sqrt{74}$ c is 13

$10^2 + \sqrt{74}^2 = 13^2$

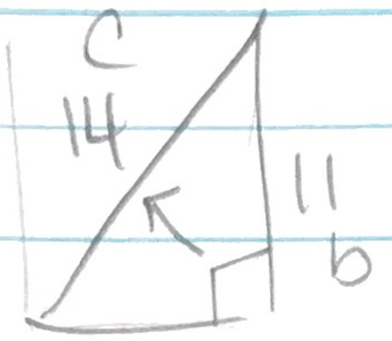
$100 + 74 = 169$

$174 = 169$

False

Not a right Δ.

Leg



$x^2 + 11^2 = 14^2$

$x^2 + 121 = 196$

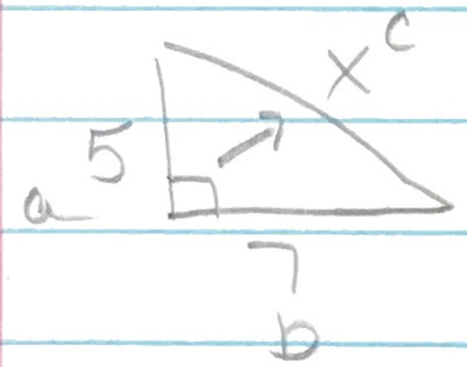
$-121 \quad -121$

$\sqrt{x^2} = \sqrt{75}$

$x = \sqrt{75}$ exact

$x \approx 8.66$ approx.

Hyp.



$5^2 + 7^2 = x^2$

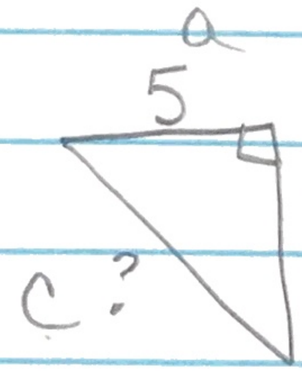
$25 + 49 = x^2$

$\sqrt{74} = \sqrt{x^2}$

$x = \sqrt{74}$

$x \approx 8.60$

word prob



$5^2 + 8^2 = c^2$

$25 + 64 = c^2$

$\sqrt{89} = \sqrt{c^2}$

$c = \sqrt{89}$

$c \approx 9.4$