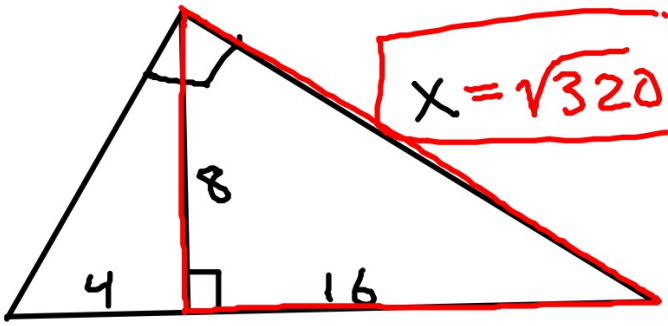
Good morning; warm up in textbooks: p.285



Find the exact value of x. (in radical form)

$x = \sqrt{320}$

$8^2 + 16^2 = x^2$

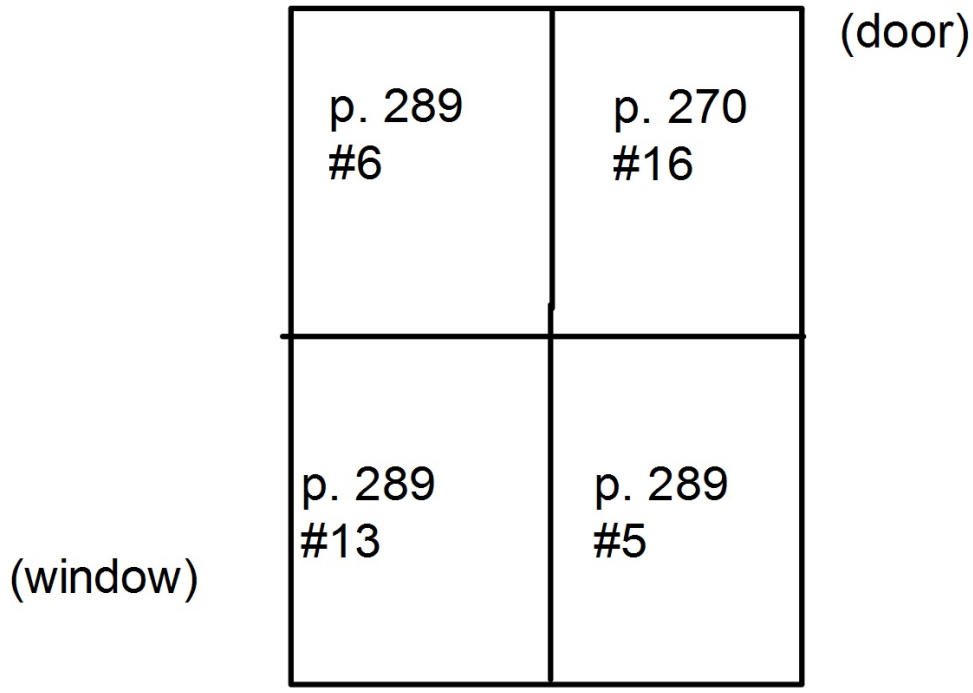
$64 + 256 = x^2$

$\sqrt{320} = \sqrt{x^2}$

$17.88\ldots \approx x$

Hw solutions

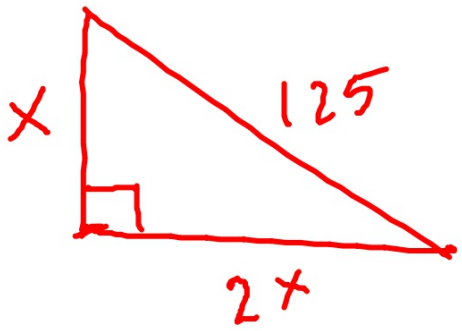
Work with your table to come to a consensus on the 4 hw problems. Shown below are the discussion leaders for each problem.



ndard baseball diamond is a square 90 feet
ch side. Find the distance of a throw
from the catcher 3 feet behind home
n an attempt to throw out a runner trying
al second base. Round to the nearest whole numl

6. hyp: 125 m

shorter $= \frac{1}{2}$. longer



$x^2 + (2x)^2 = 125^2$

$x^2 + 4x^2 = 15625$

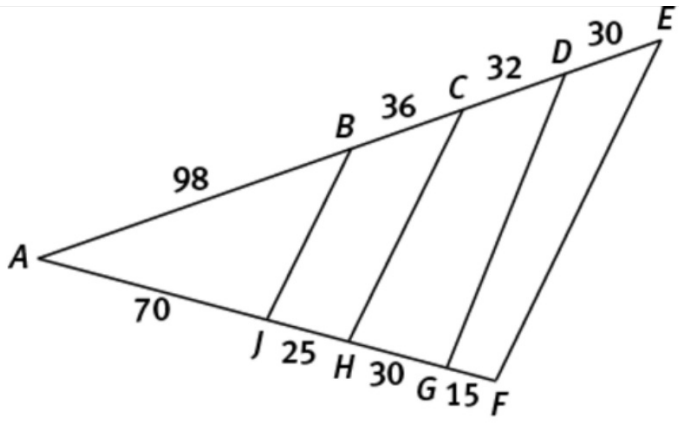
$\frac{5x^2}{5} = \frac{15625}{5}$

$\sqrt{x^2} = \sqrt{3125}$

$x = 55.90$

≈ 56

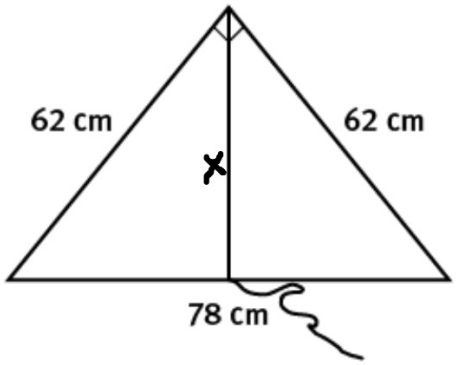
(B)


A
98
B
36
C
32
D
30
E
70
J
25
H
30
G
15
F

Remaining questions?

Practice: p289
#7 and 8

7.



8. Find the length of the hypotenuse of an isosceles right triangle with leg length 5 centimeters. Give the exact answer. (radical form)

Geometric Mean:

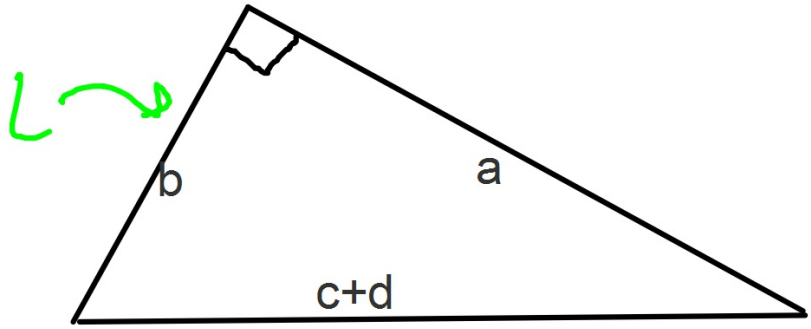
1. With a single cut, create two congruent right triangles from the construction paper provided.

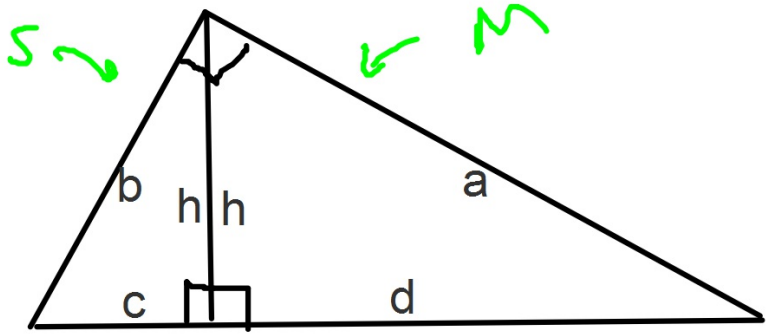
2. Using one of the right triangles, sketch an altitude from the right angle to the hypotenuse. Use a ruler and be as precise as possible.

3. Cut along this altitude. You now have 3 triangles. Place the 2 smaller ones into the large triangle.

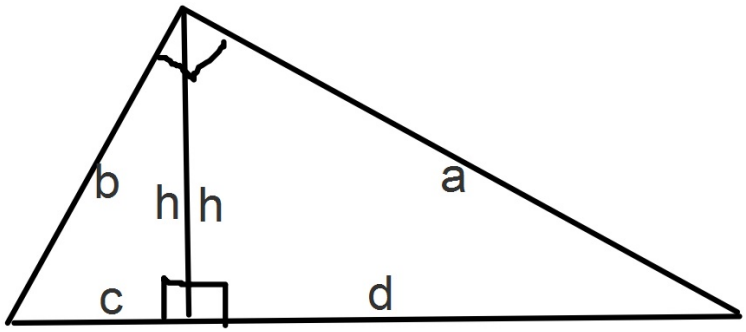
4. Are the three triangles similar? How do you know?

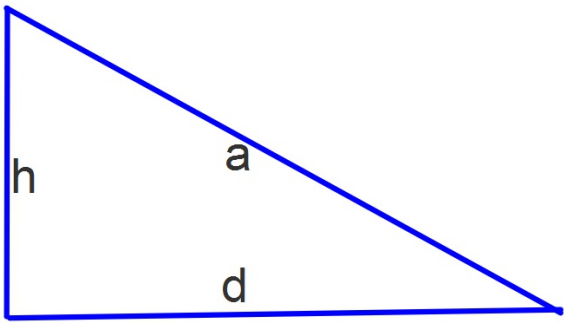
Labeling

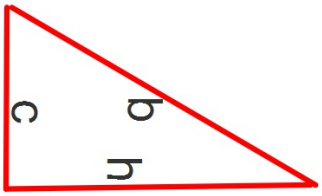


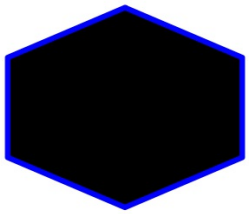


Find the value of h in terms of c and d.









$$\frac{c}{h} = \frac{h}{d}$$

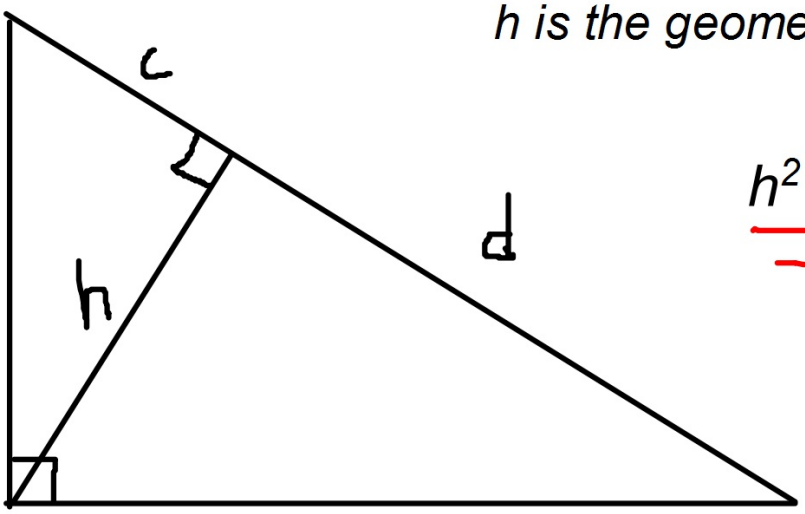
$$h^2 = c \cdot d$$

$$\boxed{h = \sqrt{c \cdot d}}$$

Geometric Mean Formula (if you want one)

p. 280

h is the geometric mean of c and d

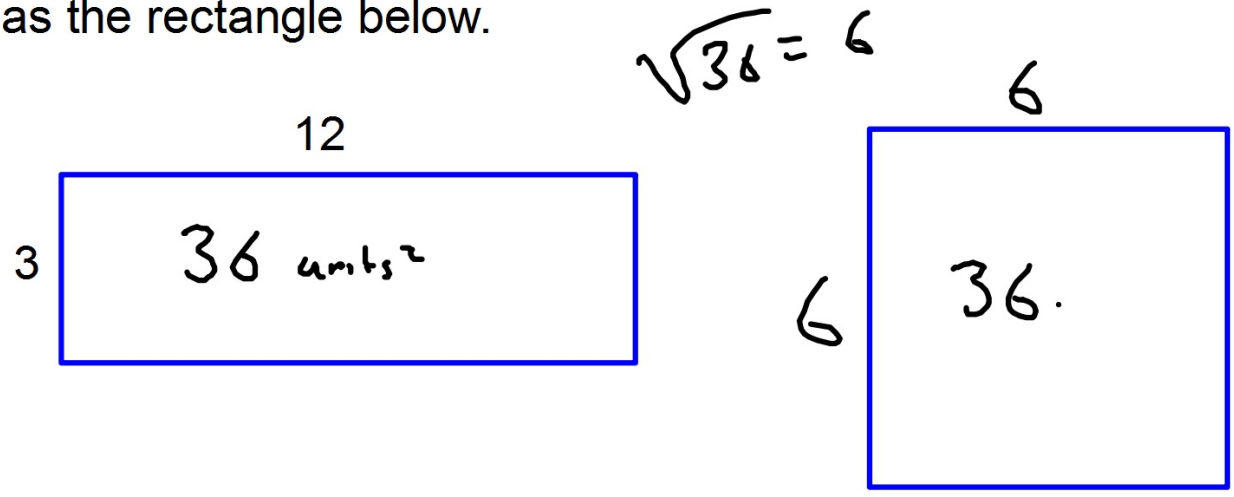


$h^2 = c*d$ or, $h = \sqrt{cd}$

Why is it important?

Problem: with elbow partners:

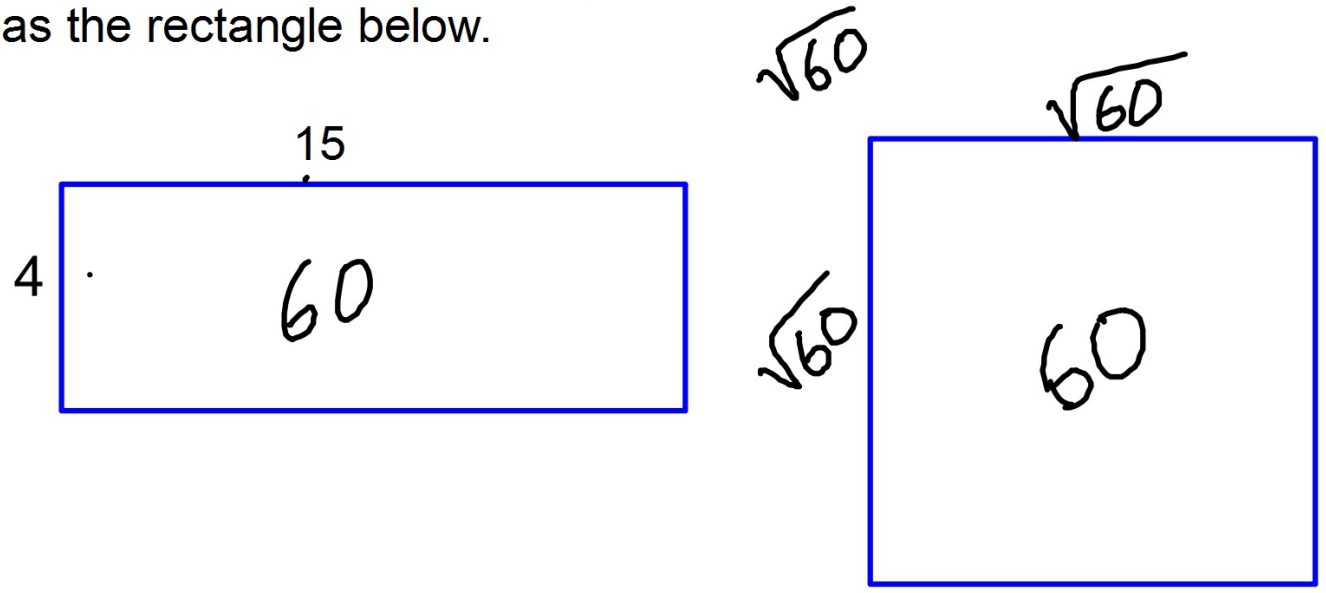
Find the dimensions of a square that has the same area as the rectangle below.



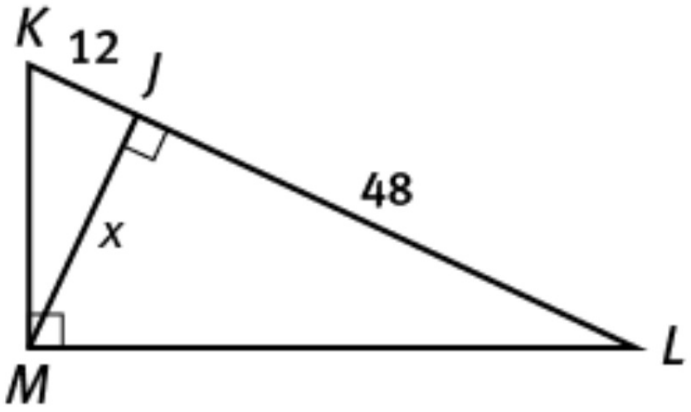
Why is it important?

Problem: with elbow partners:

Find the dimensions of a square that has the same area as the rectangle below.



p. 280 #5 Find the value of x.
[with face partners]



$h^2 = 12*48$
$h^2 = 576$
$h = 24$

How can this work in the real world? Why is it called a "mean"?

You are shopping for your first car and find the following two used models for otherwise identical, identically priced Hondas. You want to balance attractiveness and reliability.

Cosmetic condition: 3/5
Mechanical condition:
passed 202 of 250 checks

Cosmetic condition: 4/5
Mechanical condition:
passed 183 of 250 checks.

Which one do you buy? How can you support your decision?

Cosmetic condition: 3/5
Mechanical condition:
passed 202 of 250 checks

Cosmetic condition: 4/5
Mechanical condition:
passed 183 of 250 checks.

Typical average (arithmetic mean)

$$\frac{202 + 3}{2} = 102.5$$

$$\frac{183+4}{2} = 93.5$$

But are mechanical and cosmetic treated equally??

Cosmetic condition: 3/5
Mechanical condition:
passed 202 of 250 checks

Cosmetic condition: **0**/5
Mechanical condition:
passed 202 of 250 checks

$$\frac{202 + 3}{2} = 102.5$$

$$\frac{202+0}{2} = 101$$

Very close! But one car SUCKS!

Averaging two numbers that are on different scales gives one of them an unfair weight.

This is where geometric mean can help.

$h^2 = c \cdot d$

$h = \sqrt{c \cdot d}$

Cosmetic condition: 3/5
Mechanical condition:
passed 202 of 250 checks

Cosmetic condition: 4/5
Mechanical condition:
passed 183 of 250 checks.

Find the geometric mean for each car's scores.

$h = \sqrt{3 \cdot 202} = \sqrt{606} \approx 24.61$

$h = \sqrt{183 \cdot 4} = \sqrt{732} \approx 27.05$

So which car really scores better?

Assessment Wednesday

SRT-B4b: Triangle Proportionality (last class, hw)
SRT-B4c: Pythagorean Theorem (hw, today cw)
SRT-B5d: Geometric Mean (today, tonight's hw)

Tonight's hw:

p. 281
#2c, 5, 8, 9
(SRT-B5d)