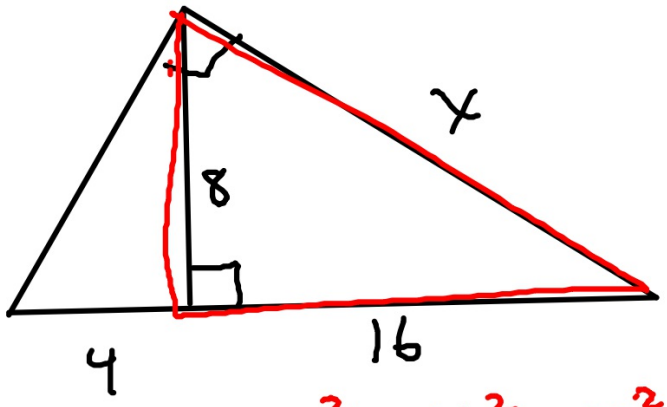
Good afternoon; warm up in textbooks: add to p.285



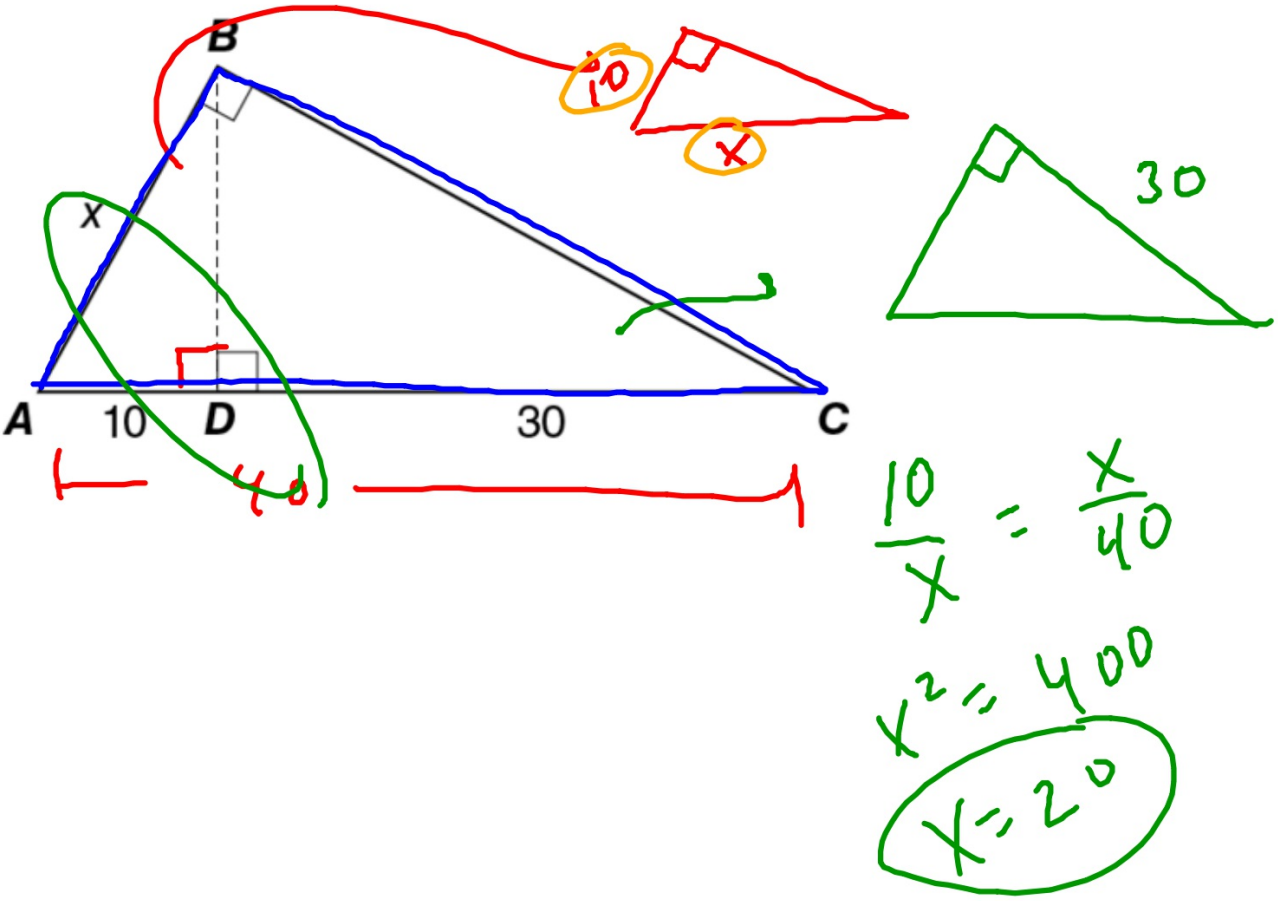
Find the exact value of x.
(in radical form)

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

$x = \sqrt{320}$

Okay...now try this:

also add to p285



$$\frac{10}{x} = \frac{x}{40}$$

$$x^2 = 400$$

$$x = 20$$

Hw Solutions:

p. 270

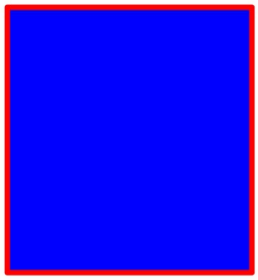
16.

a. no

b. yes

c. no

d. no

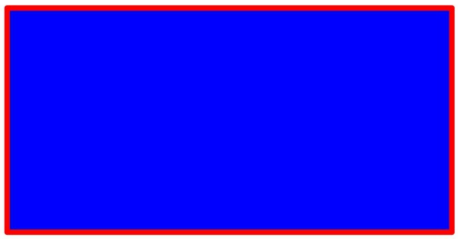


p. 289

5. C

6. B

13. Yes, 100=100



Look over homework with your table mates. Check with your partners that you know how to do the problems you were confused about or missed.

Hw solutions

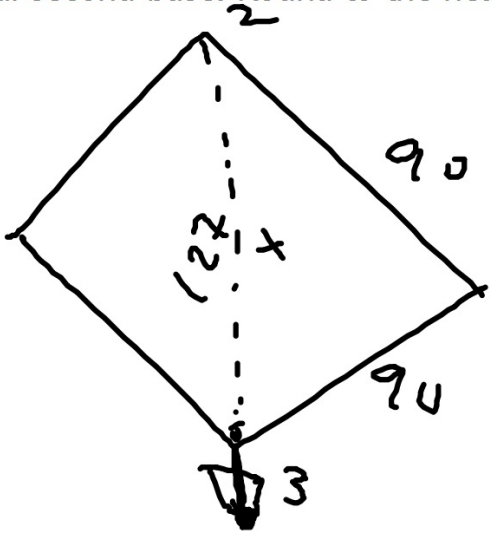
Work with your table to come to a consensus on the 4 hw problems. Shown below are the discussion leaders for each problem. Go through each problem as a group, and the discussion leader will decide whose solution to go with.

(door)

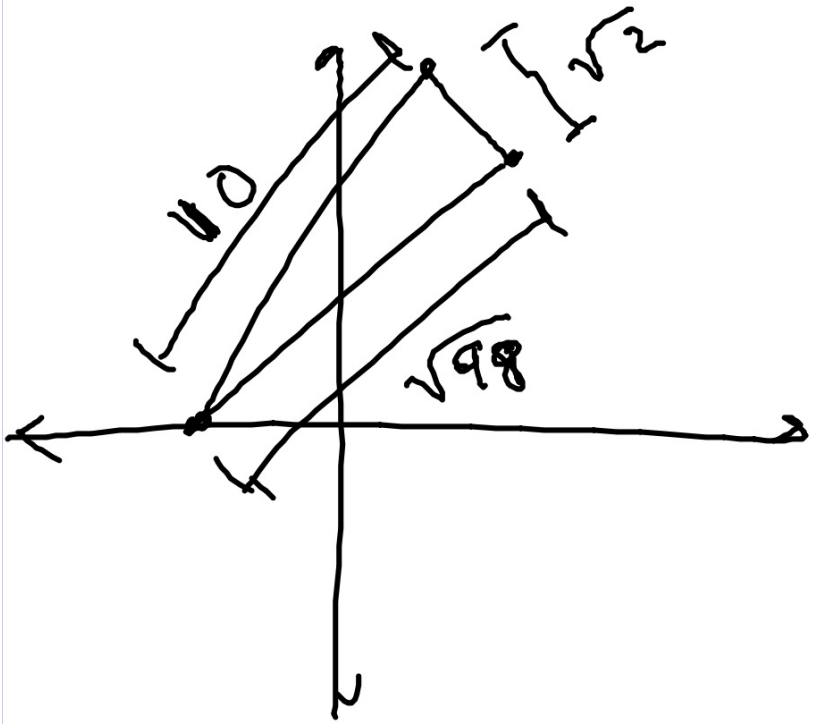
p. 289 #6	p. 270 #16
p. 289 #13	p. 289 #5

(window)

A standard baseball diamond is a square 90 feet on each side. Find the distance of a throw made from the catcher 3 feet behind home plate in an attempt to throw out a runner trying to steal second base. Round to the nearest whole number.

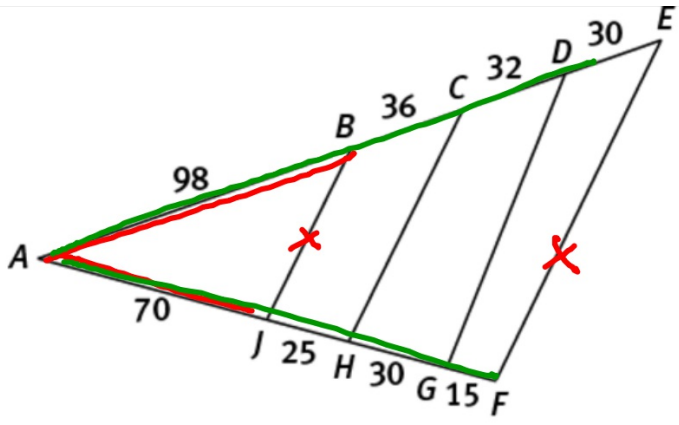


C ≈ 130'

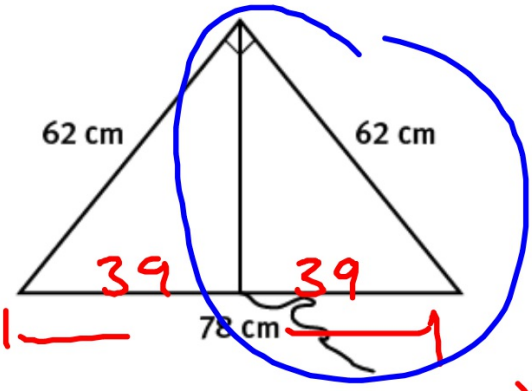


$a^2 + b^2 = c^2$

$2 + 98 \qquad 10^2$


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

Practice: p289
#7



$a^2 + b^2 = c^2$ ✓

$39^2 + b^2 = 62^2$

$b \approx 49.2$

$39^2 + 62^2 = c^2$ ✗

Geometric Mean:

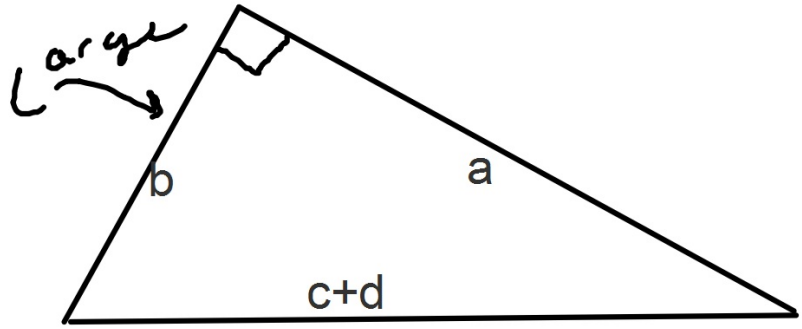
1. With a single cut, create two congruent right triangles from the construction paper provided.

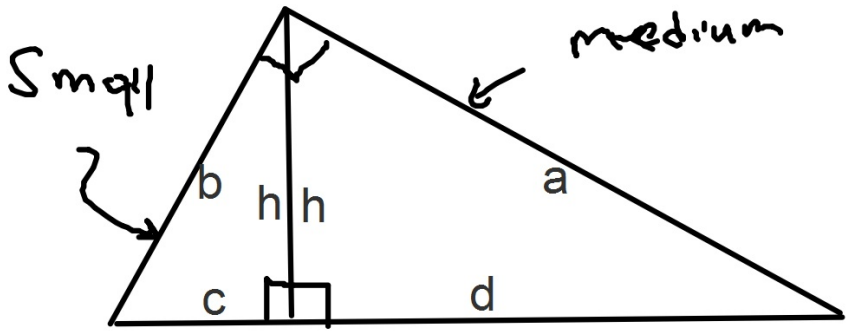
2. Using one of the right triangles, create an altitude from the right angle to the hypotenuse by folding. How do you know you've created a 90°?

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

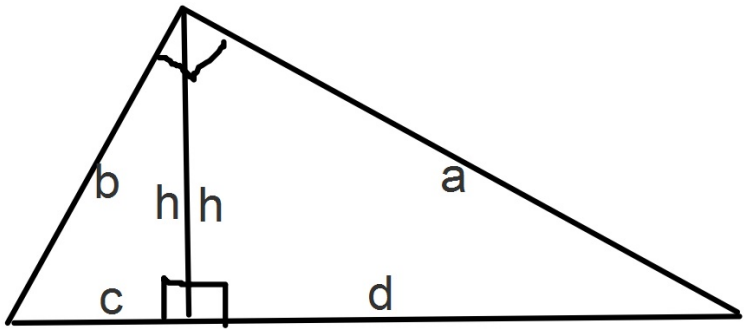
4. Are the three triangles similar? How do you know?

Labeling



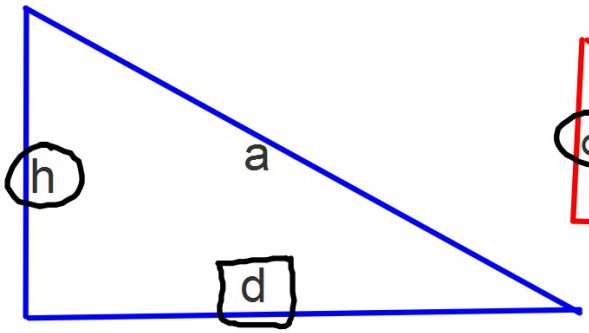


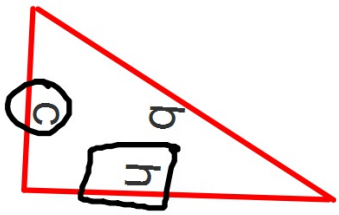
Find the value of h in terms of c and d.



Come up with a formula/relationship with only h, c, and d in it.

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





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

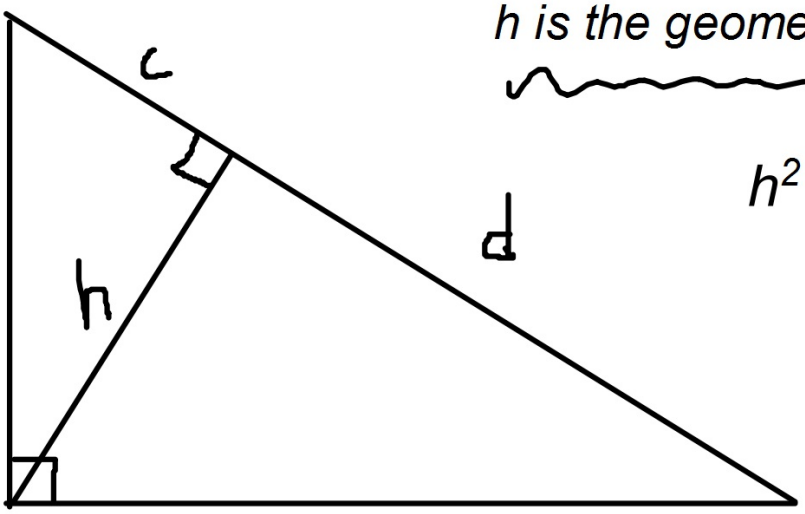
$$h^2 = c \cdot d$$

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

Geometric Mean Formula (if you want one)

p. 280

h is the geometric mean of c and d



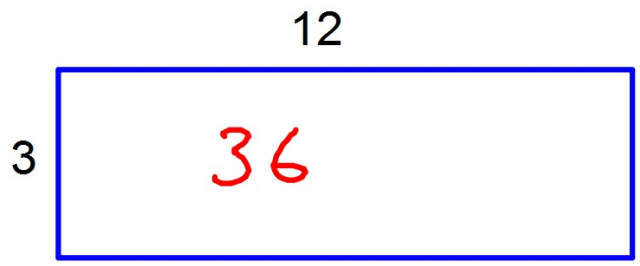
$h^2 = c*d$ or, $h = \sqrt{cd}$

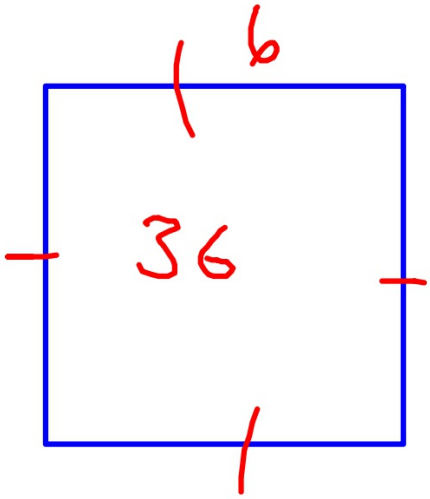
Why is it important?

Problem: with elbow partners:

$\sqrt{36}$

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





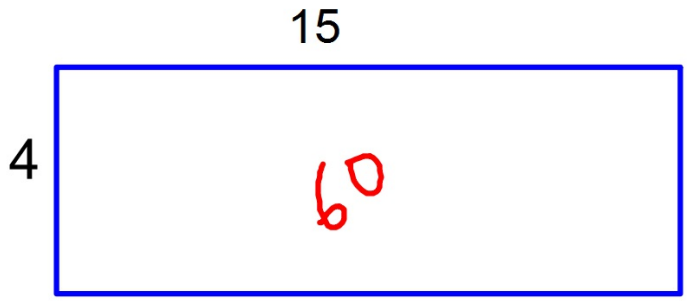
Why is it important?

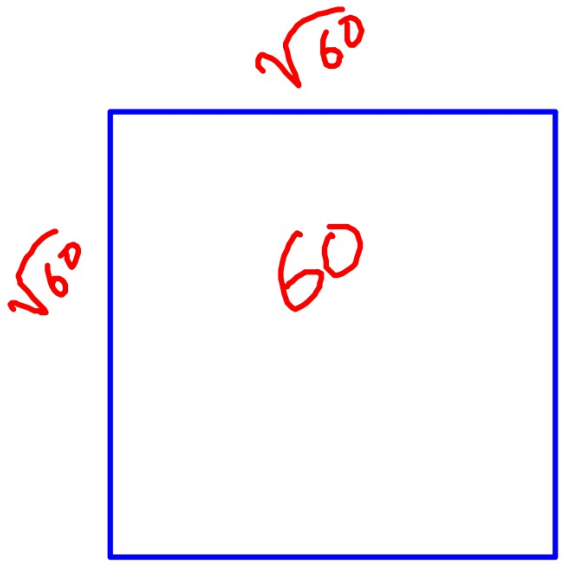
Problem: with elbow partners:

$h = \sqrt{4 \cdot 15}$

$= \sqrt{60} \approx 7.7$

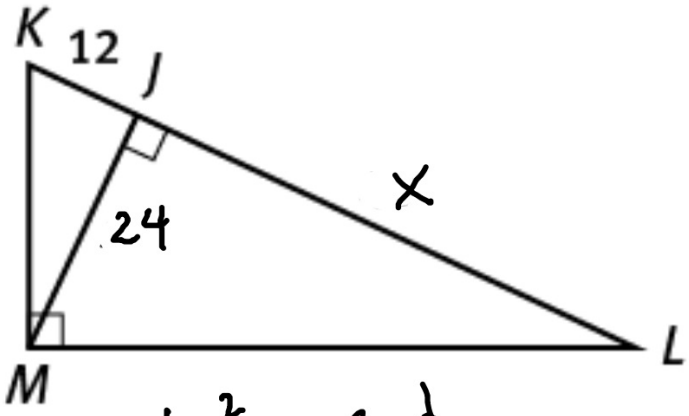
Find the dimensions of a square that has the same area as the rectangle below.





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

$h^2 = cd$ $h = \sqrt{c \cdot d}$



[redacted]

$h^2 = c \cdot d$

$24^2 = 12 \cdot x$

$\frac{576}{12} = \frac{12x}{12}$

$48 = x$

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.

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.

$h^2 = 202.3$

$h = \sqrt{606}$

≈ 24.6

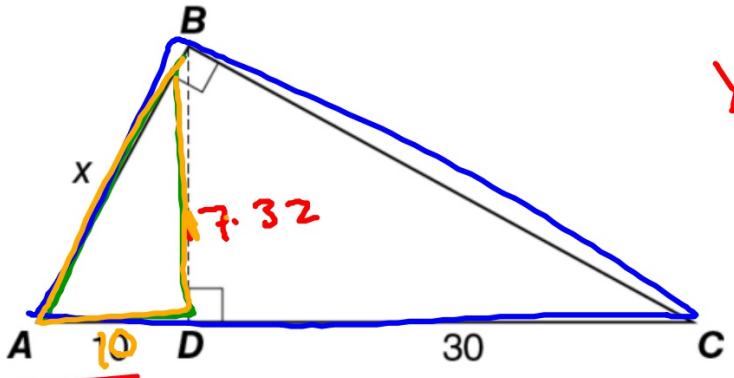
$h^2 = 4183$

$h^2 = 732$

$h = 27$

So which car really scores better?

Revisiting earlier problem:



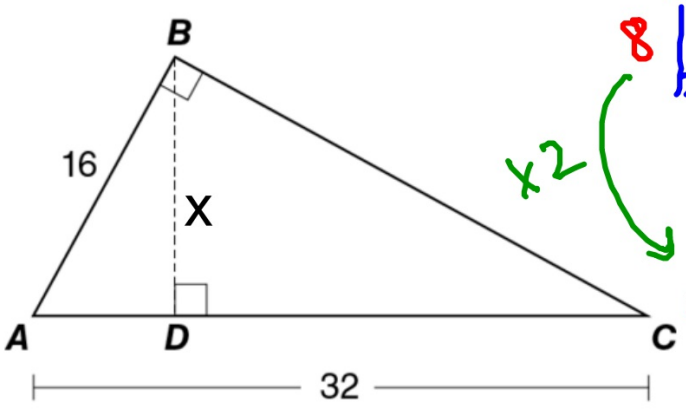
$x^2 = 10 \cdot 40$

$x^2 = 400$

$x = 20$

$\sqrt{10 \cdot 30} = \sqrt{300} \approx 17.32$

One last challenge: Add to p. 281



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

$64 + x^2 = 256$

$x^2 = 192$

$x = \sqrt{192}$

$= 13.85$

S

M

L

x2

8

16

x

16

32

Assessment Tomorrow

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)