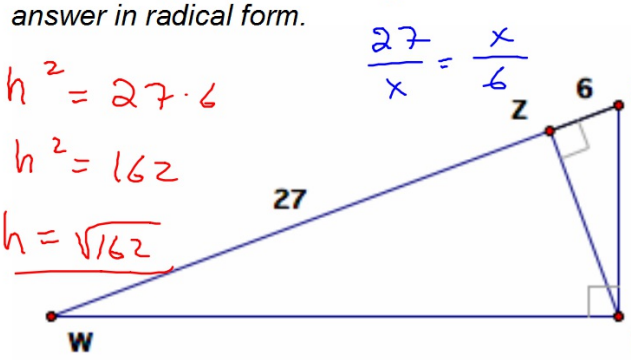
Good afternoon; warm up: Add to text p. 28[redacted]
(wherever you have room)

Find the length of ZY. Leave your answer in radical form.



$\frac{27}{x} = \frac{x}{6}$

$h^2 = 27 \cdot 6$

$h^2 = 162$

$h = \sqrt{162}$

Now simplify the radical

$\sqrt{162}$

$\sqrt{2 \cdot 81}$

$\sqrt{2 \cdot 9 \cdot 9}$

$\sqrt{2 \cdot 3 \cdot 3 \cdot 3 \cdot 3}$

$3 \cdot 3\sqrt{2} = 9\sqrt{2}$

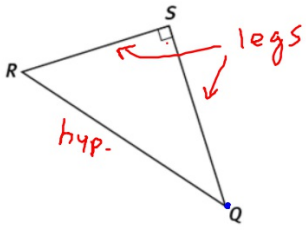
Be sure to look over p. 281 hw and ask any questions you may have on it!!

FYI: next assessment: Thursday 1/22 (NOTE DATE CHANGE)

Covers:

SRT-C6a: Special Right Triangles (today's topic)
SRT-C6b: Basic Trigonomtery (today, Thursday, Tuesday)
SRT-C7a: Sine and Cosine of Complementary Angles (Thursday)
SRT-C8: Using Pythagorean and Trig (Tuesday)

p307
10.



a. the leg opposite $\angle Q$ $\overline{RS}$

b. the leg adjacent to $\angle Q$ $\overline{SQ}$ "next to"

c. the leg opposite $\angle R$ $\overline{SQ}$

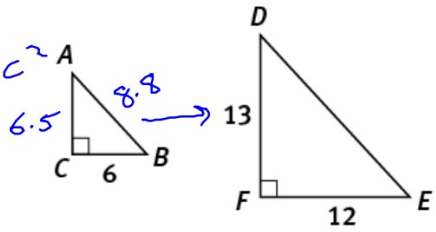
d. the leg adjacent to $\angle R$ $\overline{RS}$

e. the hypotenuse $\overline{QR}$.

11a

$6.5^2 + 6^2 = c^2$

≈ 8.8



11. Make sense of problems. Find the scale factor and the unknown side leng similar triangles.

a. $\Delta ABC \sim \Delta DEF$

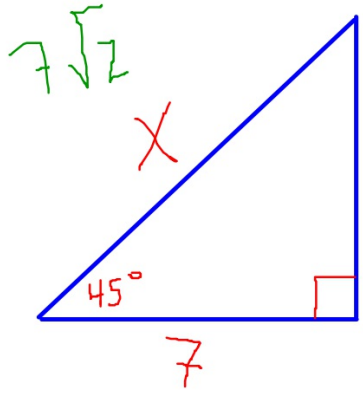
Scale factor 2

AC = 6.5

AB = 8.8

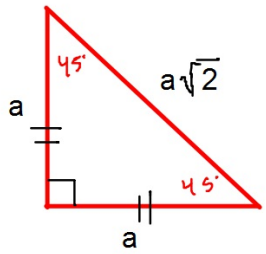
DE = 17.6

Special Right Triangles
p. 293:

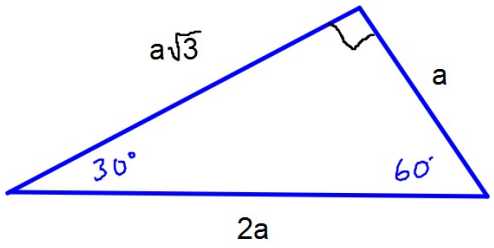


Special Right Triangles (ADD THESE TO NOTES; MEMORIZE DIAGRAM AND LAYOUT)

p 294: The 45-45-90 Triangle

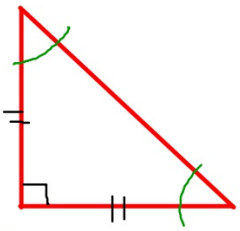


p 295: The 30-60-90 Triangle



Special Right Triangles
p. 294

(important to memorize upcoming diagrams)

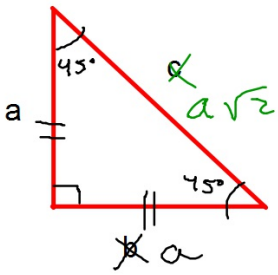


What do you know about this figure?
Think of at least 2 things.

- 2 sides ≅
- a rt. / 90° angle
- 2 45° angles.
- Isosceles △.

180°
- 90°
90° left

90° / 2



$a\sqrt{2}$

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

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

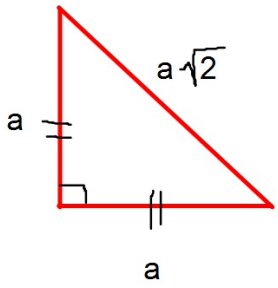
$\sqrt{2a^2} = \sqrt{c^2}$

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

$a \cdot \sqrt{2} = c$

[redacted]

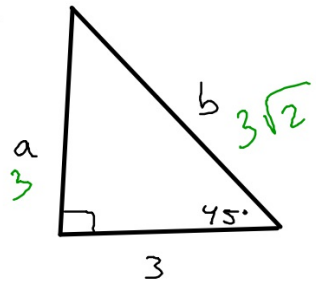
The 45-45-90 Triangle



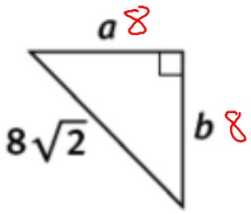
Need to memorize!
And understand where it comes from

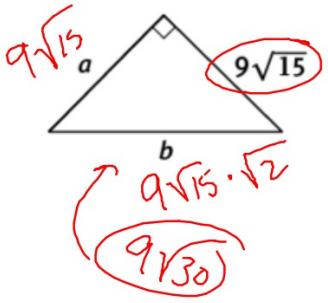
Easy example: p. 294 10a

10a.



Now do: #10bc



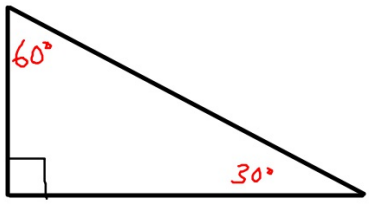


Harder example:

#12: Find the perimeter of a square, as a simplified radical, if the length of its diagonal is 14 inches.

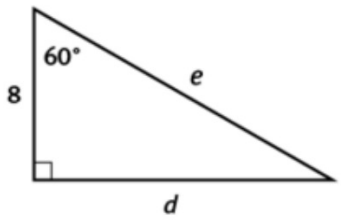
The 30-60-90 Triangle: p. 295

Do we know which angle is 30° and which is 60°? How?



(memorize this)

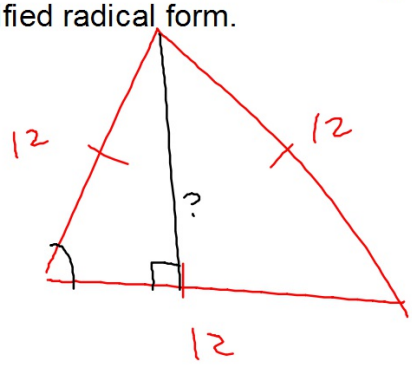
Easy example: p. 297 #13

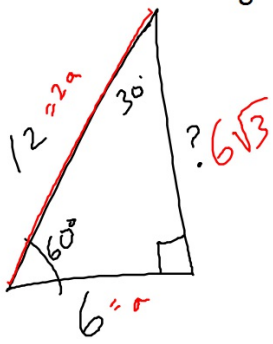


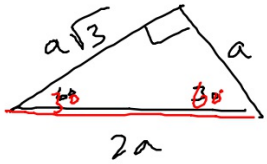
Harder example: #11

Challenge: #17 p. 298

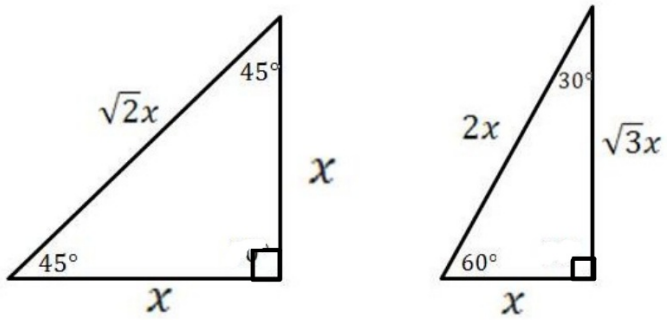
The perimeter of an equilateral triangle is 36 inches. Find the length of its altitude in simplified radical form.







Summary



Why would triangles and angles have applications in sounds, waves, etc.?

As an acute angle in a right triangle increases, the other decreases. (Why?)

Since the angles shrink/grow, so do the side lengths. (Why?)

This leads to a structured pattern within the shape.

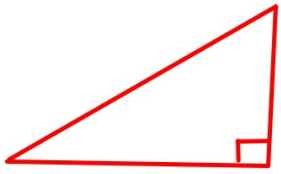
So certain relationships appear in a predictable manner that repeats every 360°.

https://www.mathsisfun.com/algebra/trig-interactive-unit-circle.html

http://www.analyzemath.com/unitcircle/unit_circle_applet.html

Important things to know before Thursday's trig lesson:

- Labeling system: angle-side relationship
  [add this to p. 306]



- Angle of reference:
  "theta" θ

  just like "x" usually represents a number, θ usually represents an angle measure.

- the words "opposite" "adjacent" and "hypotenuse" as they relate to sides
  (reference angle matters!)
  (Look back to p. 307)

HW:
Special Right Triangles Worksheet #1-10 (SRT-C6a)

Bring a device with you Thursday if possible (smartphone, tablet, laptop; something with wifi)

Special note for 4A