Questions on 5.3 HW?

Dec 10-3:22 PM

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17 / 48   125%

The picture at the right is of the Washington Monument in DC. The shaft of the monument is a square frustum. The bottom square measures 55 ft. on a side and the top square measures 34.5 feet. The top is a square pyramid.

9. Find the dimensions of the 4 triangular faces of the pyramid. (Height is 55.5 ft)

$$(17.25)^2 + (55.5)^2 = h^2$$

$$\sqrt{3377.8} = h$$

$$58.1 = h$$

$$4\left(\frac{1}{2}(34.5)(58.1)\right)$$

$$4008.9 \, ft^2$$

55.5 ft   h

34.5 ft

34.5 ft   17.25

10.25 ft

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8.50 x 11.00 in

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10.25 ft

10. Find the area of each face of the pyramid.

34.5 ft

500 ft $= h$

11. Find the area of the 4 trapezoids that make the faces of the frustum.
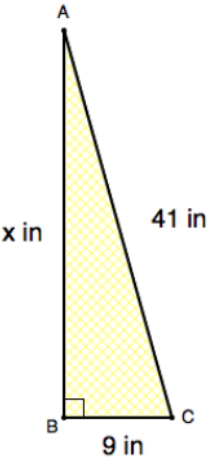The area of a trapezoid: $A = \frac{b_1 + b_2}{2} h$ (You will need to find h.)
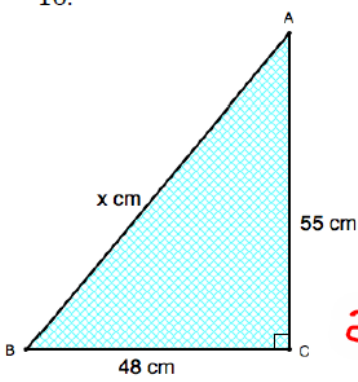
you don't have to find h...

55 ft

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8.50 x 11.00 in

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3

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Calculate the missing side in the right triangles. Give your answers in simplified radical form.

15.

A

x in

41 in

B   C

9 in

16.

A

x cm

55 cm

B   C

48 cm

17.

A

$18\sqrt{3}$ m

x m

B   C

18 m

hypotenuse = 2·shorter leg

2(18) = 36

longer = √3 · shorter leg

shorter leg

18.

A

19. $5\sqrt{2}$ ft

B

20.

16 mi
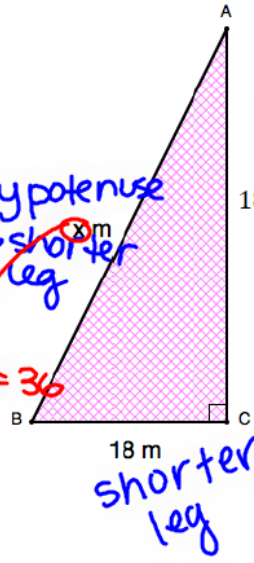
B   C

8.50 x 11.00 in

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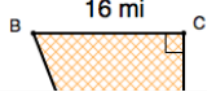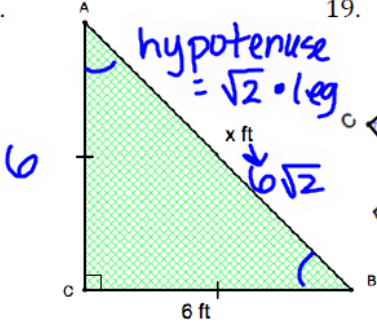
19 / 48   125%

18.

hypotenuse = √2 • leg

6

x ft

6√2

6 ft

19. $5\sqrt{2}$ ft

x ft

5 ft

20.

16 mi

B   C

24 mi   x mi

A

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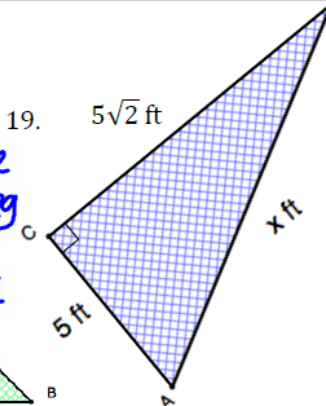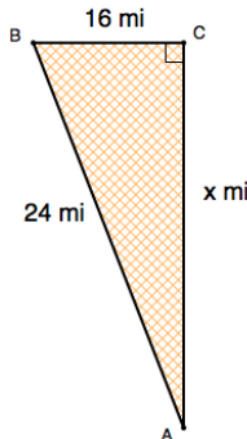
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16 / 48   125%

2.

B

$B \Rightarrow 60$

A   C

3.

A   C

4.

P

$z_1 \Rightarrow 46$

$z_0 \Rightarrow 78$

R

5.

R

$z_2 \Rightarrow 146$

S   T

$z_1 \Rightarrow 119$

6. $\overline{EG} \cong \overline{FH}$

E

90°

F 45°   45° H

90°

G

7.

G   K

$z_2 \Rightarrow 60$

H

8.

M

(3x - 2)

(2x + 5)   (x + 3)

8.50 x 11.00 in

5.4 Hard as Nails
A Practice Understanding Task

Tatiana is helping her father purchase supplies for a deck he is building in their back yard. Based on her measurements for the area of the deck, she has determined that they will need to purchase 24 decking planks. These planks will be attached to the framing joists with 16d nails. (Tatiana thinks it is strange that these nails are referred to as "16 penny nails" and wonders where that way of naming nails comes from. After doing some research she has found that in the late 1700s in England the size of a nail was designated by the price of purchasing one hundred nails of that size. She doubts that her dad will be able to buy one hundred 16d nails for 16 pennies.)
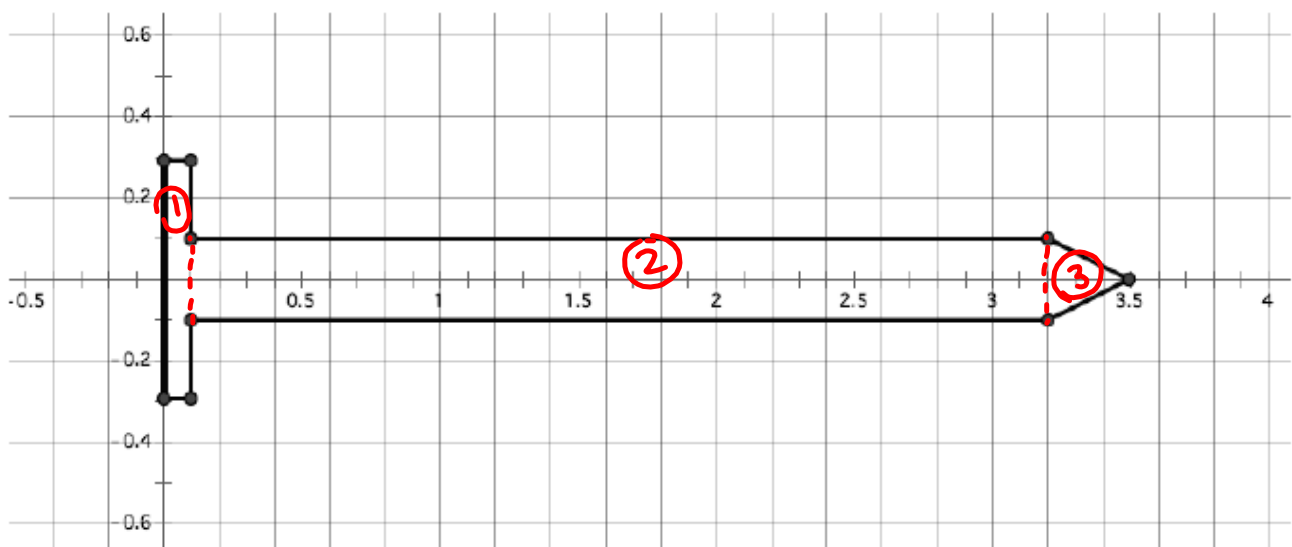
Nails are sold by the pound at the local hardware store, so Tatiana needs to figure out how many pounds of 16d nails to tell her father to buy. She has gathered the following information.

- The deck requires 24 decking planks

- Each plank requires 9 nails to attach it to the framing joists

- 16d nails are made of steel that has a density of 4.65 oz/in³

- There are 16 ounces in a pound

24x9 = 216 total nails

Tatiana has also found the following drawing of a cross section of a 16d nail. She knows she can use this drawing to help her find the volume of the nail, treating it as a solid of revolution. (Note: The scale on the *x*- and *y*-axis is in inches.)

1. Devise a plan for finding the volume of the nail based on the given drawing. Describe your plan in words, and then show the computations that support your work.

$$\text{Total Volume} : \overset{①}{\text{Vol Cylinder}} + \overset{②}{\text{Vol Cylinder}} + \overset{③}{\text{Vol Cone}}$$

$$Vol = \pi(0.3)^2(0.1) + \pi(0.1)^2(3.1) + \frac{1}{3}\pi(0.1)^2(0.3)$$

$$V = 0.009\pi + 0.031\pi + 0.001\pi$$

$$V = 0.028274 + 0.097389 + 0.003142$$

$$V = 0.041\pi \approx 0.128805 \text{ in}^3$$

$$\boxed{V = 0.129 \text{ in}^3}$$

2. Devise a plan for finding the number of pound of 16d nails Tatiana's father should buy. Describe your plan in words, and then show the computations that support your work.

$$216 \text{ nails} \times 0.041\pi = 8.856\pi \approx \underline{27.8 \text{ in}^3}$$

$$\underline{\text{in } 216 \text{ nails}}$$

$$\frac{4.65 \text{ oz}}{1 \text{ in}^3} \cdot \frac{27.8219 \text{ in}^3}{1} = 129.372 \text{ oz} \quad \text{in } 216 \text{ nails}$$

$$\frac{129.372 \text{ oz}}{1} \cdot \frac{1 \text{ lb}}{16 \text{ oz}} = 8.08575 \approx \boxed{8.09 \text{ lbs}}$$

Homework/Classwork

5.4 Ready, Set, Go

Oct 21-8:47 AM