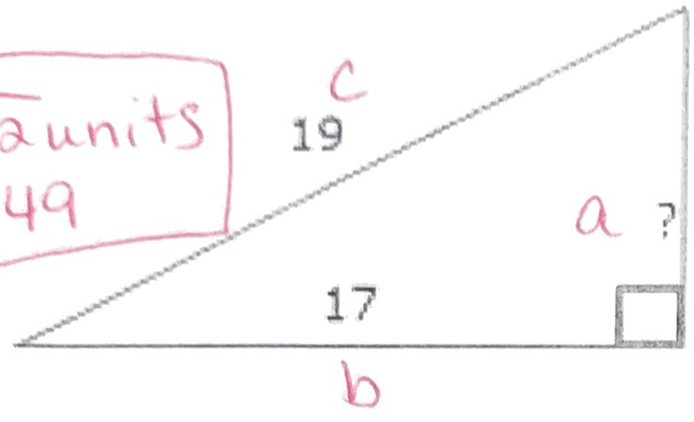
Name: _____ Date_____ #47 Finding a missing side length

See next page for work

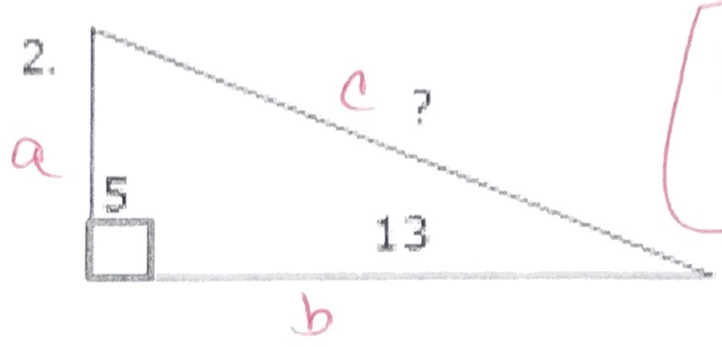
Find the length of the missing side of the right triangle. Give your answer as both a simplified radical and a decimal rounded to the nearest hundredth.

1.



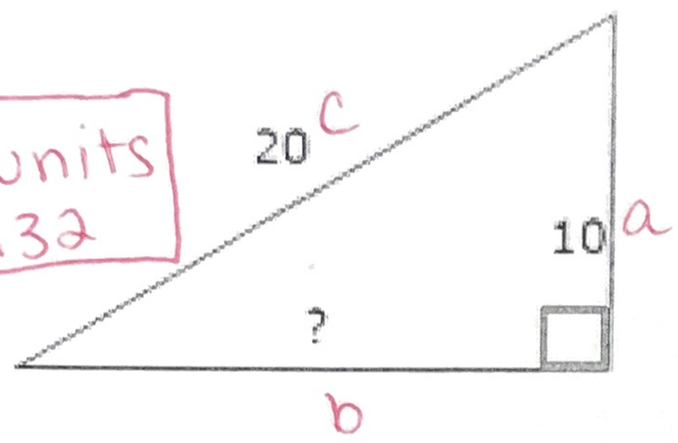
$a = 6\sqrt{2}$ units
$a \approx 8.49$

2.



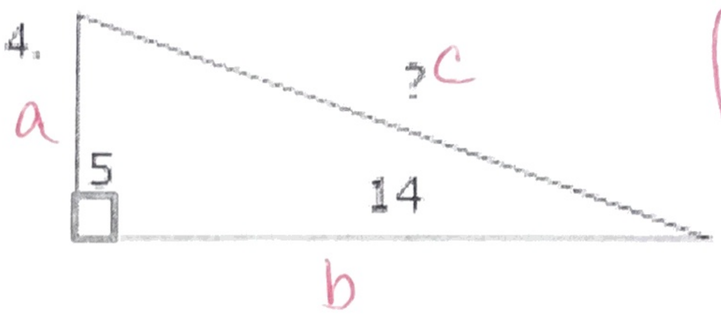
$c = \sqrt{194}$ units
$c \approx 13.93$

3.



$b = 10\sqrt{3}$ units
$b \approx 17.32$

4.



$c = \sqrt{221}$ units
$c \approx 14.87$

In 5 -8 below, c represents the hypotenuse of a right triangle with side lengths a, b, and c. Fill in the missing side length as a simplified radical and a decimal to the nearest tenth.

5. $a = 7$ $b = 2\sqrt{5}$ $c =$ $\sqrt{69}$ or $c \approx 8.3$

6. $a =$ $3\sqrt{6}$ or $a \approx 7.3$ $b = 3\sqrt{10}$ $c = 12$

7. $a = \sqrt{15}$ $b =$ $2\sqrt{3}$ or $b \approx 3.5$ $c = 3\sqrt{3}$

8. $a = \sqrt{34}$ $b = \sqrt{91}$ $c =$ $5\sqrt{5}$ or $c \approx 11.2$

HW 47

① $a^2 + 17^2 = 19^2$

$a^2 + 289 = 361$

$-289 \quad -289$

$\sqrt{a^2} = \sqrt{72}$

$a = \sqrt{72}$

$\sqrt{36 \cdot 2}$

$a = 6\sqrt{2}$ units

$a \approx 8.49$

② $5^2 + 13^2 = c^2$

$25 + 169 = c^2$

$\sqrt{194} = \sqrt{c^2}$

$c = \sqrt{194}$ units

$c \approx 13.93$

③ $10^2 + b^2 = 20^2$

$100 + b^2 = 400$

$-100 \quad -100$

$\sqrt{b^2} = \sqrt{300}$

$b = \sqrt{300}$

$\sqrt{100 \cdot 3}$

$b = 10\sqrt{3}$ units

$b \approx 17.32$

④ $5^2 + 14^2 = c^2$

$25 + 196 = c^2$

$\sqrt{221} = \sqrt{c^2}$

$c = \sqrt{221}$ units

$c \approx 14.87$

⑤ $7^2 + (2\sqrt{5})^2 = c^2$

$49 + 2^2 \cdot \sqrt{5}^2 = c^2$

$49 + 4 \cdot 5 = c^2$

$49 + 20 = c^2$

$\sqrt{69} = \sqrt{c^2}$

$c = \sqrt{69}$

$c \approx 8.3$

⑥ $a^2 + (3\sqrt{10})^2 = 12^2$

$a^2 + 3^2 \cdot \sqrt{10}^2 = 144$

$a^2 + 9 \cdot 10 = 144$

$a^2 + 90 = 144$

$-90 \quad -90$

$\sqrt{a^2} = \sqrt{54}$

$a = \sqrt{54}$

$a = \sqrt{9 \cdot 6}$

$a = 3\sqrt{6}$

$a \approx 7.3$

(7) $(\sqrt{15})^2 + b^2 = (3\sqrt{3})^2$

$15 + b^2 = 3^2 \cdot \sqrt{3}^2$

$15 + b^2 = 9 \cdot 3$

$15 + b^2 = 27$

$-15 \quad -15$

$\sqrt{b^2} = \sqrt{12}$

$b = \sqrt{12}$

$\sqrt{4 \cdot 3}$

$b = 2\sqrt{3}$

$b \approx 3.5$

(8) $(\sqrt{34})^2 + (\sqrt{91})^2 = c^2$

$34 + 91 = c^2$

$\sqrt{125} = \sqrt{c^2}$

$c = \sqrt{125}$

$\sqrt{25 \cdot 5}$

$c = 5\sqrt{5}$

$c \approx 11.2$