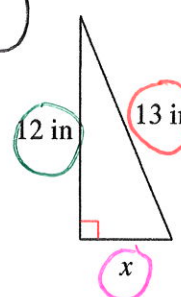
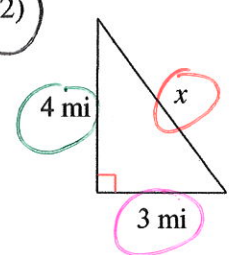


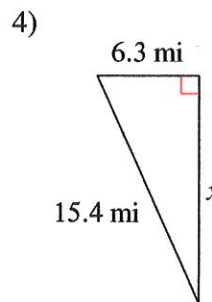
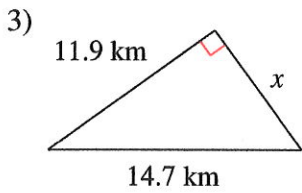
DO ONLY CIRCLED PROBLEMS!

The Pythagorean Theorem and Its Converse

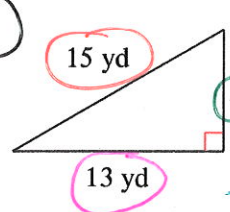
Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.

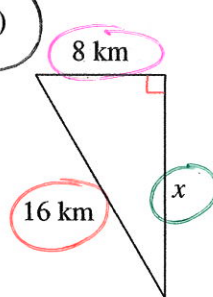
1)   $a^2 + b^2 = c^2$   
 $x^2 + 12^2 = 13^2$   
 $x^2 + 144 = 169$   
 $\quad -144 \quad -144$   
 $\hline \sqrt{x^2} = \sqrt{25}$   
 $x = 5 \text{ in}$

2)   $a^2 + b^2 = c^2$   
 $3^2 + 4^2 = x^2$   
 $9 + 16 = x^2$   
 $\sqrt{25} = \sqrt{x^2}$   
 $x = 5 \text{ mi}$



Find the missing side of each triangle. Leave your answers in simplest radical form.

5)   $a^2 + b^2 = c^2$   
 $13^2 + x^2 = 15^2$   
 $169 + x^2 = 225$   
 $\quad -169 \quad -169$   
 $\hline \sqrt{x^2} = \sqrt{56}$   
 $x = \sqrt{2 \cdot 4 \cdot 7}$   
 $x = 2\sqrt{14} \text{ yd}$

6)   $a^2 + b^2 = c^2$   
 $8^2 + x^2 = 16^2$   
 $64 + x^2 = 256$   
 $\quad -64 \quad -64$   
 $\hline \sqrt{x^2} = \sqrt{192}$   
 $x = \sqrt{4 \cdot 4 \cdot 4 \cdot 3}$   
 $x = 2 \cdot 2 \cdot 2 \cdot \sqrt{3} = 8\sqrt{3} \text{ km}$

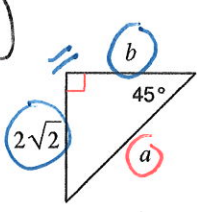
Find the missing side of each right triangle. Side  $c$  is the hypotenuse. Sides  $a$  and  $b$  are the legs. Leave your answers in simplest radical form.

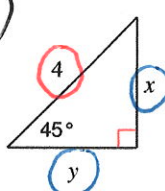
7)  $a = 11 \text{ m}, c = 15 \text{ m}$

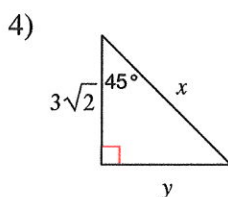
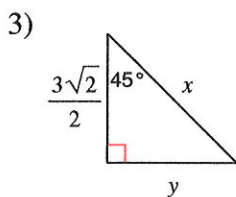
8)  $b = \sqrt{6} \text{ yd}, c = 4 \text{ yd}$

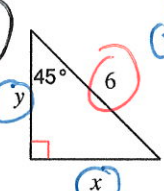
Special Right Triangles

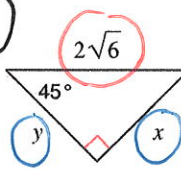
Find the missing side lengths. Leave your answers as radicals in simplest form.

1)   $b = 2\sqrt{2}$  (both are LEGS)  
 $a = 2\sqrt{2} \cdot \frac{1}{\sqrt{2}}$   
 $\sqrt{2} \cdot \sqrt{2} = 2$ , so  
 $a = 2(2) = 4$   
 $b = 2\sqrt{2}$

2)   $LEG = \frac{hypotenuse}{\sqrt{2}}$   
 $(x \neq y)$   
 $x = \frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$   
 $y = 2\sqrt{2}$   
 $x = 2\sqrt{2}$



5)   $LEG = \frac{hypotenuse}{\sqrt{2}}$   
 $(x \neq y)$   
 $x = \frac{6}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$   
 $y = 3\sqrt{2}$   
 $x = 3\sqrt{2}$

6)   $LEG = \frac{hypotenuse}{\sqrt{2}}$   
 $(x \neq y)$   
 $x = \frac{2\sqrt{6}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{12}}{2} = \sqrt{12}$   
 $\hookrightarrow \sqrt{4 \cdot 3} = 2\sqrt{3}$   
 $y = 2\sqrt{3}$   
 $x = 2\sqrt{3}$

