

Version A

1. Simplify. Show all of your work:

a) $\sqrt{18}$

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

b) $\frac{\sqrt{32}}{\sqrt{2}}$

$$\textcircled{4}$$

c) $3\sqrt{6} \cdot 4\sqrt{6}$
 $\sqrt{54} \cdot \sqrt{96}$

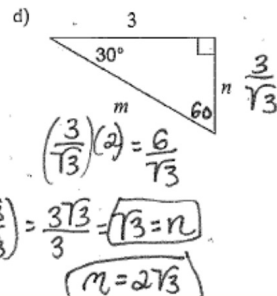
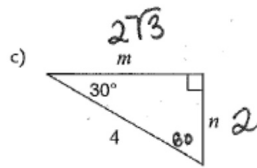
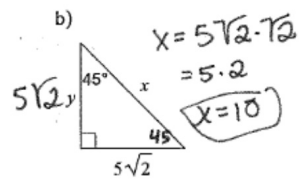
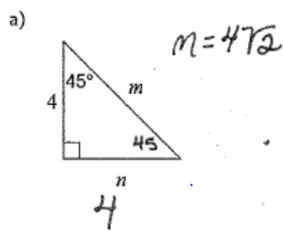
$$\textcircled{72}$$

d) $(2\sqrt{11})^2$
 $2\sqrt{11}(2\sqrt{11})$

$$\textcircled{44}$$

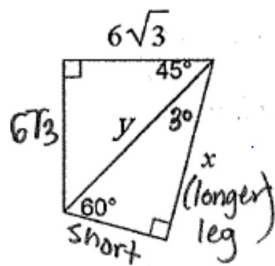
Version A

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



Version A

3) Find the missing side lengths x and y . Leave your answers as radicals in simplest form.



$$y = 6\sqrt{3} \cdot \sqrt{2}$$
$$y = 6\sqrt{6}$$

$$\text{Short} = \frac{1}{2}(6\sqrt{6})$$

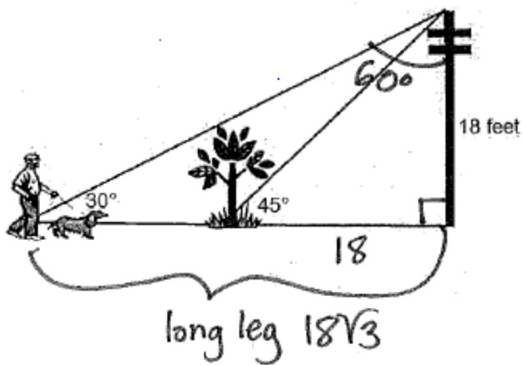
$$\text{Short} = 3\sqrt{6}$$

$$x = 3\sqrt{6} \cdot \sqrt{3} = 3\sqrt{18}$$
$$= 3\sqrt{9 \cdot 2}$$
$$= 3 \cdot 3\sqrt{2}$$

$$x = 9\sqrt{2}$$

Version A

4) A man is out walking his dog. The street they are walking along has a small tree and an electric pole. The electric pole is 18 feet tall. Use the diagram of the situation below to determine how far away the man and his dog are from the tree.



$$\text{Dog to tree: } 18\sqrt{3} - 18$$

$$\approx 31.2 - 18$$

$$\approx 13.2 \text{ feet}$$

Version B

1. Simplify. Show all of your work:

$$\begin{aligned} \text{a) } & \sqrt{27} \\ & \sqrt{9 \cdot 3} \\ & 3\sqrt{3} \end{aligned}$$

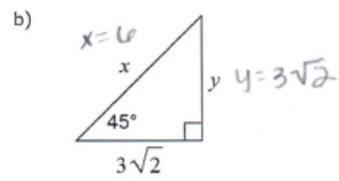
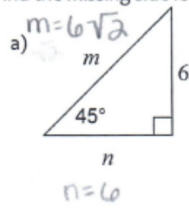
$$\begin{aligned} \text{b) } & \frac{\sqrt{72}}{\sqrt{2}} \\ & \sqrt{\frac{72}{2}} = \sqrt{36} = 6 \end{aligned}$$

$$\begin{aligned} \text{c) } & 4\sqrt{3} \cdot 2\sqrt{3} \\ & 8\sqrt{9} \\ & 8 \cdot 3 = 24 \end{aligned}$$

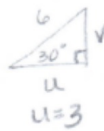
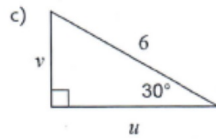
$$\begin{aligned} \text{d) } & (3\sqrt{7})^2 \\ & (3\sqrt{7})(3\sqrt{7}) \\ & 9\sqrt{49} \quad 1 \cdot 7 = 63 \end{aligned}$$

Version B

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

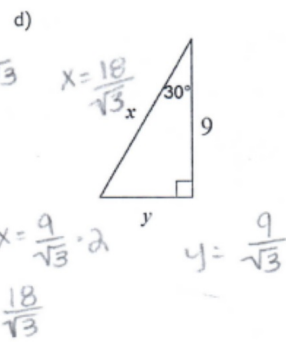


$$x = 3\sqrt{2} \cdot \sqrt{2} = 3\sqrt{4} = 3 \cdot 2 = 6$$



$$v = 3\sqrt{3}$$

$$u = 3$$

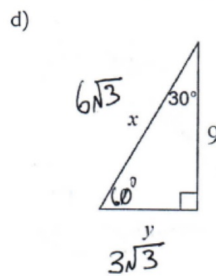
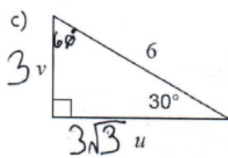
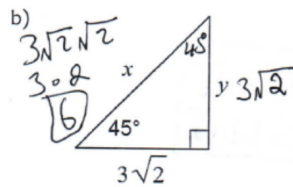
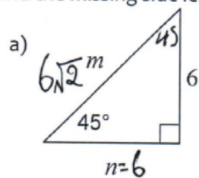


$$x = \frac{9}{\sqrt{3}} \cdot 2$$

$$\frac{18}{\sqrt{3}}$$

Version B

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

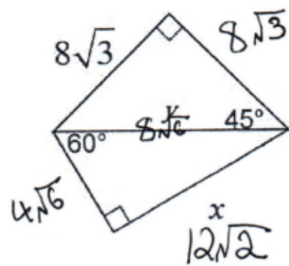


$$\frac{9}{\sqrt{3}} = x \frac{\sqrt{3}}{\sqrt{3}}$$
$$\frac{9}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{3}$$
$$3\sqrt{3}$$

Rationalized
Denominator!

Version B

3) Find the missing side lengths x and y . Leave your answers as radicals in simplest form.



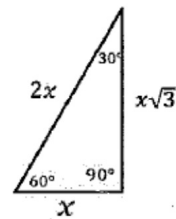
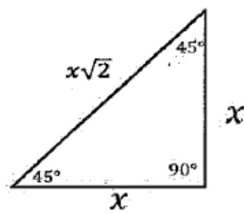
$$y = 8\sqrt{3} \cdot \sqrt{2}$$
$$y = 8\sqrt{6}$$

$$x = \frac{4\sqrt{6} \cdot \sqrt{3}}{4 \cdot \sqrt{18}}$$
$$x = \frac{4 \cdot \sqrt{18}}{4 \cdot 3\sqrt{2}}$$
$$x = 12\sqrt{2}$$

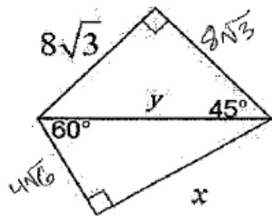
$$y = 8\sqrt{6}$$
$$x = 12\sqrt{2}$$

Version B

Special Right Triangle Patterns



3) Find the missing side lengths x and y . Leave your answers as radicals in simplest form.



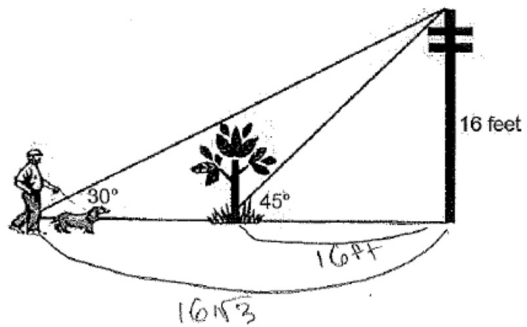
$$\begin{aligned} x &= 12\sqrt{2} \\ y &= 8\sqrt{6} \end{aligned}$$

$$8\sqrt{3} \cdot \sqrt{2}$$

$$4\sqrt{6} \cdot \sqrt{3} = 4\sqrt{18} = 4\sqrt{9 \cdot 2} = 4 \cdot 3\sqrt{2} = 12\sqrt{2}$$

Version B

- 4) A man is out walking his dog. The street they are walking along has a small tree and an electric pole. The electric pole is 16 feet tall. Use the diagram of the situation below to determine how far away the man and his dog are from the tree.



$$16\sqrt{3} - 16 \text{ feet}$$

or

$$\approx 11.71 \text{ feet}$$