

$$1) -\sqrt{3} + 3\sqrt{3} = \boxed{2\sqrt{3}}$$

$$2) -3\sqrt{2} + 3\sqrt{2} = \boxed{0}$$

$$3) \boxed{3\sqrt{3} - \sqrt{3}} - 2\sqrt{2} = \boxed{2\sqrt{3} - 2\sqrt{2}}$$

$$4) \boxed{3\sqrt{5}} - 2\sqrt{6} + \boxed{4\sqrt{5}} = \boxed{7\sqrt{5} - 2\sqrt{6}}$$

$$5) \sqrt{6} + \sqrt{24}$$

$$\sqrt{4 \cdot 6} = \boxed{3\sqrt{6}}$$

$$\sqrt{6} + 2\sqrt{6}$$

$$6) -\sqrt{12} - 4\sqrt{3}$$

$$-\sqrt{4 \cdot 3} - 4\sqrt{3}$$

$$-2\sqrt{3} - 4\sqrt{3} = \boxed{-6\sqrt{3}}$$

$$7) 3\sqrt{54} + 2\sqrt{24}$$

$$3\sqrt{9 \cdot 6} + 2\sqrt{4 \cdot 6}$$

$$3 \cdot 3\sqrt{6} + 2 \cdot 2\sqrt{6}$$

$$9\sqrt{6} + 4\sqrt{6} = \boxed{13\sqrt{6}}$$

$$8) 3\sqrt{9} + 8\sqrt{8}$$

$$3 \cdot 3 + 8\sqrt{4 \cdot 2}$$

$$9 + 8 \cdot 2\sqrt{2}$$

$$9 + 16\sqrt{2}$$

$$9) 2\sqrt{5} - \sqrt{50} + 3\sqrt{20} + \sqrt{18}$$

$$2\sqrt{5} - \sqrt{25 \cdot 2} + 3\sqrt{4 \cdot 5} + \sqrt{9 \cdot 2}$$

$$2\sqrt{5} - 5\sqrt{2} + 3 \cdot 2\sqrt{5} + 3\sqrt{2}$$

$$\boxed{2\sqrt{5} - 5\sqrt{2} + 6\sqrt{5} + 3\sqrt{2}}$$

$$8\sqrt{5} - 2\sqrt{2}$$

$$10) 6\sqrt{40} + 2\sqrt{90} - \sqrt{80}$$

$$6\sqrt{4 \cdot 10} + 2\sqrt{9 \cdot 10} - \sqrt{16 \cdot 5}$$

$$6 \cdot 2\sqrt{10} + 2 \cdot 3\sqrt{10} - 4\sqrt{5}$$

$$12\sqrt{10} + 6\sqrt{10} - 4\sqrt{5} = \boxed{18\sqrt{10} - 4\sqrt{5}}$$

11) Find the perimeter of the rectangle.

(Give an exact and approximate answer.)

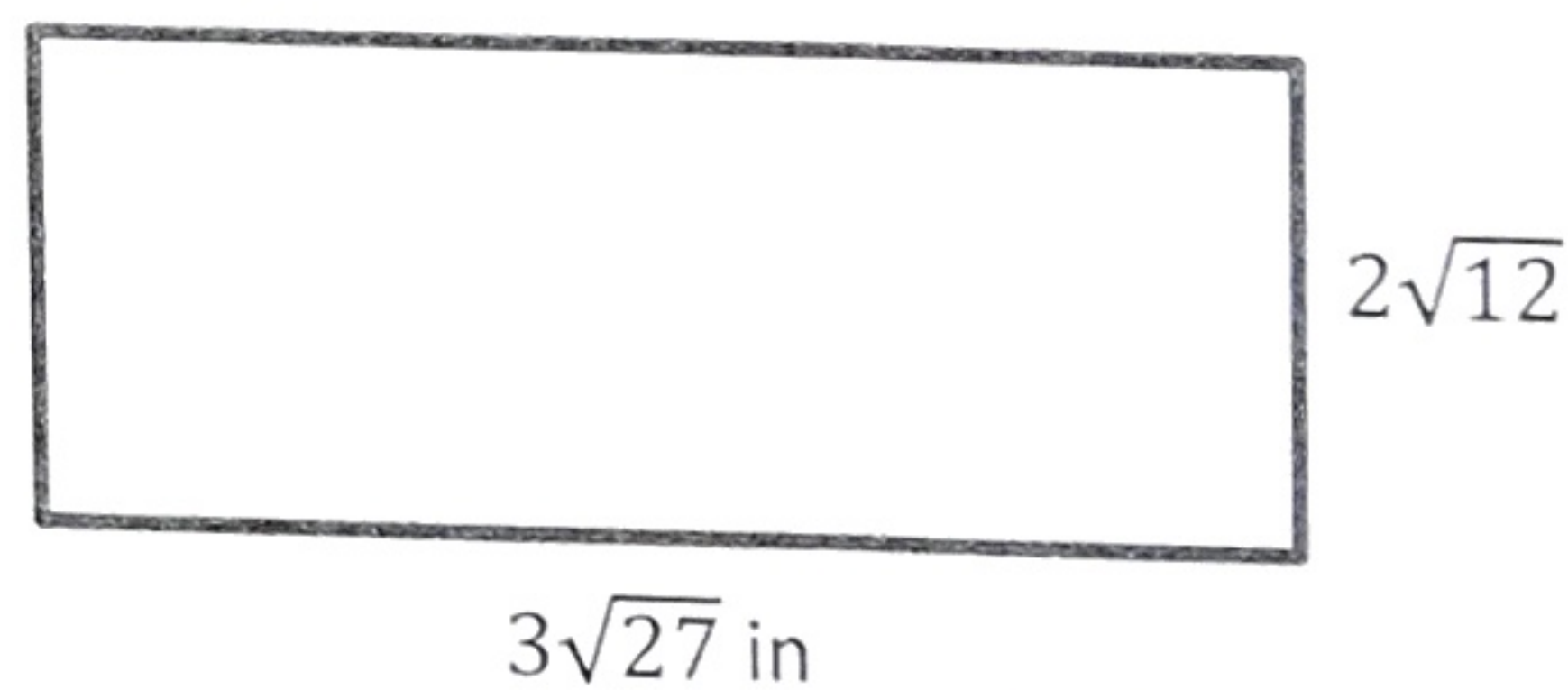
Sum of all sides

$$P = 3\sqrt{27} + 2\sqrt{12} + 3\sqrt{27} + 2\sqrt{12}$$

$$3\sqrt{9 \cdot 3} + 2\sqrt{4 \cdot 3} + 3\sqrt{9 \cdot 3} + 2\sqrt{4 \cdot 3}$$

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

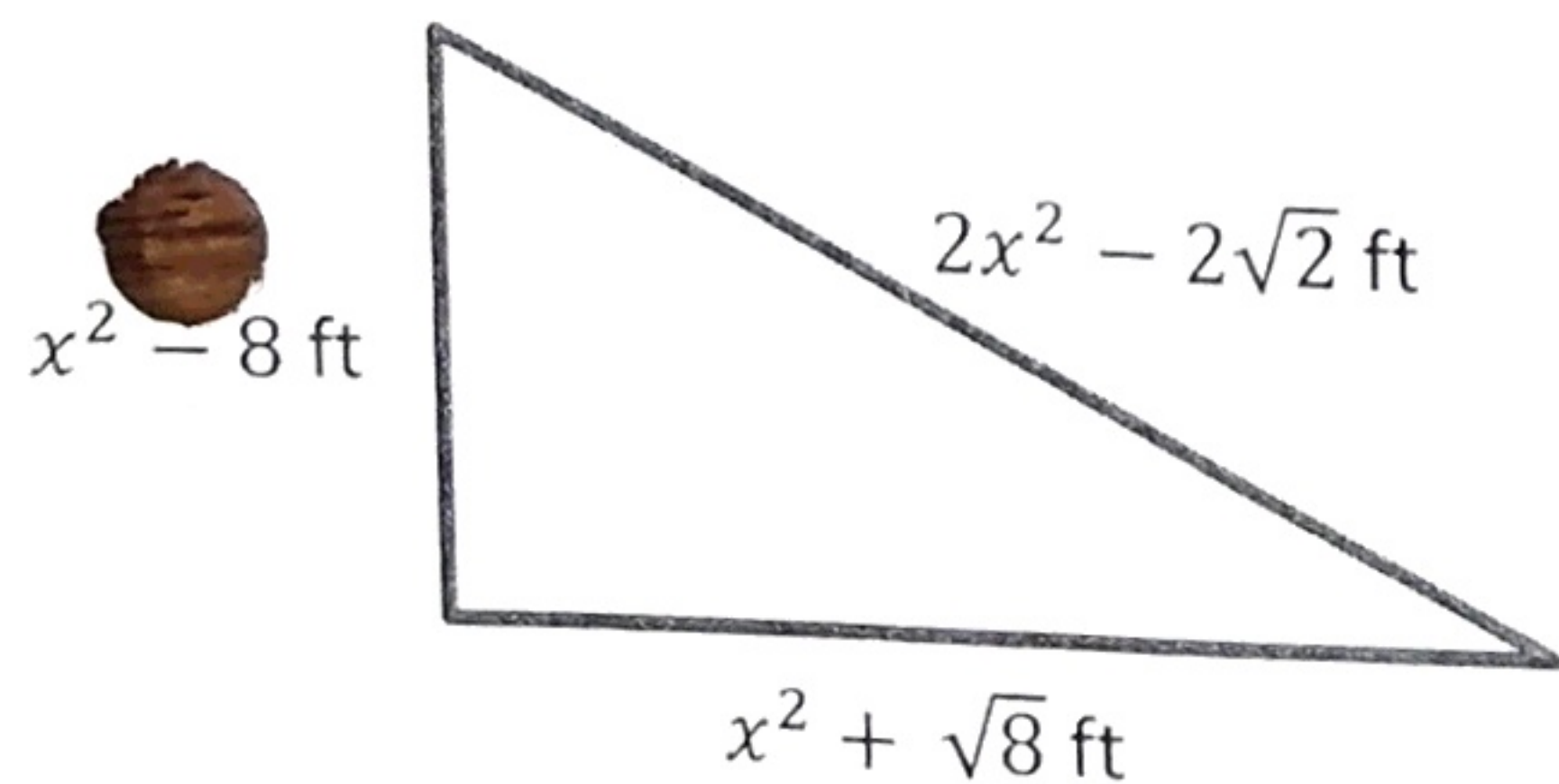
$$9\sqrt{3} + 4\sqrt{3} + 9\sqrt{3} + 4\sqrt{3}$$



$$P = 26\sqrt{3} \text{ inches}$$

$$P \approx 45.0 \text{ inches}$$

12) Find the value of x if the perimeter of the triangle is 28 feet.



$$P = \underbrace{x^2}_{x^2} + \underbrace{2x^2}_{2x^2} - 2\sqrt{2} + \underbrace{x^2}_{x^2} + \sqrt{8}$$

$$28 = 4x^2 - 2\sqrt{2} + \sqrt{4 \cdot 2}$$

$$\frac{28}{4} = \frac{4x^2}{4} - 2\sqrt{2} + 2\sqrt{2}$$

$$\sqrt{7} = \sqrt{x^2}$$

$$\boxed{x = \sqrt{7} \text{ ft}}$$