Tarefa Básica - Relações Métricas no Triângulo Retângulo e Teorema de Pitágoras

01.
$$a^2 = (\sqrt{3})^2 + (\sqrt{4})^2$$
$$a^2 = 3 + 4$$
$$\boxed{a = \sqrt{7}} \quad (B)$$

02.
$$x^2 = 10^2 - 6^2$$
$$x^2 = 100 - 36$$
$$x^2 = \sqrt{64}$$
$$\boxed{x = 8\,m}$$

03.
$$(\overline{AC})^2 = 1^2 + 2^2$$
$$(\overline{AC})^2 = 1 + 4$$
$$(\overline{AC})^2 = 5$$

$$(\overline{CD})^2 = 3^2 - (\overline{AC})^2$$
$$(\overline{CD})^2 = 9 - 5$$
$$(\overline{CD}) = \sqrt{4}$$
$$\boxed{\overline{CD} = 2} \quad (B)$$

04.
$$b^2 = a^2 + a^2$$
$$b^2 = 2a^2$$

$$c^2 = a^2 + b^2$$
$$c^2 = a^2 + 2a^2$$
$$c^2 = 3a^2$$

$$x^2 = a^2 + c^2$$
$$x^2 = a^2 + 3a^2$$
$$x^2 = 4a^2$$
$$x = \sqrt{2^2 \cdot a^2}$$
$$\boxed{x = 2a} \quad (B)$$

5.
$$h^2 = 6^2 - 2^2$$
$$h^2 = 36 - 4$$
$$h = \sqrt{2^2 \cdot 2^2 \cdot 2}$$
$$h = 4\sqrt{2}$$

$$A = b \cdot h / 2$$
$$A = 2 \cdot 4\sqrt{2} / 2$$
$$\boxed{A = 4\sqrt{2}} \quad (C)$$

06.
$$(\overline{AC})^2 = 6^2 + 8^2$$
$$(\overline{AC})^2 = 10^2$$

$$10^2 = x^2 + (2x)^2$$
$$100 = x^2 + 4x^2$$
$$100 = 5x^2$$
$$x^2 = 20 \qquad (a)$$
$$x = \sqrt{2^2 \cdot 5} \quad \therefore \boxed{x = 2\sqrt{5}}$$

07.
$$x^2 = (10 \cdot 5)^2 + (200 - 16 \cdot 5)^2$$
$$x^2 = 50^2 + 120^2$$
$$x = \sqrt{16900}$$
$$x = 130 \text{ cm} \quad \therefore \boxed{x = 1,3 \text{ m}} \quad (B)$$

08.
$$13^2 = (8^2 - 4^2) + (x+4)^2$$
$$169 = 48 + x^2 + 8x + 16$$
$$x^2 + 8x - 105 = 0$$
$$7 + -15 = -8$$
$$7 \bullet -15 = -105$$

$$\therefore \boxed{X_1 = 7 \text{ m}} \quad (D)$$
$$X_2 = -15 \ (\text{não convém})$$

105	3
35	5
7	7
1	

09.
$$p = \frac{(13 + 14 + 15)}{2} = 21$$

$$A = \sqrt{21(21-13)(21-14)(21-15)}$$
$$A = \sqrt{21 \cdot 8 \cdot 7 \cdot 6}$$
$$A = \sqrt{3 \cdot 7 \cdot 2^2 \cdot 2 \cdot 7 \cdot 2 \cdot 3}$$
$$A = \sqrt{3^2 \cdot 7^2 \cdot 2^2 \cdot 2^2}$$
$$A = 84$$

$$84 = \frac{14 \cdot h}{2}$$
$$h = \frac{84 \cdot 2}{14}$$
$$\boxed{h = 12}$$

10. $(r+r')^2 = (r-r')^2 + x^2$

$x^2 = (r^2 + 2r \cdot r' + r'^2) - (r^2 - 2rr' + r'^2)$

$x^2 = 4rr'$

$$\boxed{x = 2\sqrt{rr'}}$$

11. $(\overline{AE})^2 = 30^2 + 40^2$ $\qquad (\overline{CD})^2 = (\overline{AE}) \cdot (\overline{CE})$

$(\overline{AE}) = 50$ $\qquad\qquad (\overline{CE}) = 20^2 / 50$

$\qquad\qquad\qquad\qquad (\overline{CE}) = 400/50$

$$\boxed{\overline{CE} = 8} \quad (c)$$