

Nome: Gabrielly de Sousa Pereira

Turma: COINF2026

1) a) $4 \cdot 8 = 32 \text{ cm}^2$

b) $\sin 30^\circ \cdot 12 = 0,5 \cdot 12 = 6 \text{ cm}$

$\cos 30^\circ \cdot 12 = \frac{\sqrt{3}}{2} \cdot 12 = 6\sqrt{3}$

$A = 6 \cdot 6\sqrt{3} = 36\sqrt{3} \approx 62,35 \text{ cm}^2$

2) a) $8^2 = 64 \text{ cm}^2$

d) $d = l\sqrt{2}$

b) $(7\sqrt{2})^2 = 50 \cdot 2 = 100 \text{ cm}^2$

$l = \frac{d}{\sqrt{2}} \rightarrow l = \frac{6\sqrt{2}}{\sqrt{2}} = 6$

c) $(\sqrt{3})^2 = 3 \text{ cm}^2$

$A = (3\sqrt{2})^2 = 9 \cdot 2 = 18 \text{ cm}^2$

3) a) $l = \sqrt{25} = 5 \text{ cm}$

b) $l = \sqrt{12} = \sqrt{2 \cdot 2 \cdot 3} = \sqrt{2} \cdot \sqrt{3} = 2\sqrt{3} \text{ cm}$

4) a) $\frac{1}{2} \cdot 8 \cdot 5 = \frac{40}{2} = 20 \text{ cm}^2$

b) $a^2 = b^2 + c^2 \rightarrow (6 \cdot 2)^2 = 4 \cdot 4 + c^2$
 $5^2 = 3^2 + c^2$
 $c^2 = 5^2 - 3^2$
 $c = \sqrt{5^2 - 3^2} = \sqrt{25 - 9} = \sqrt{16} = 4$

$\frac{8 \cdot 6}{2} = \frac{48}{2} = 24 \text{ cm}^2$

c) $A = \frac{\sqrt{3}}{4} a^2 \rightarrow 8^2 \sqrt{3}$

$A = \frac{2 \cdot 8^2 \sqrt{3}}{4} = \frac{2 \cdot 64 \sqrt{3}}{4} = \frac{128 \sqrt{3}}{4} = 32\sqrt{3} \text{ cm}^2$

5) $\frac{(B+b) \cdot h}{2} = \frac{(7+5) \cdot 4}{2} = \frac{12 \cdot 4}{2} = \frac{48}{2} = 24 \text{ cm}^2$

nome: Gabrielly de Paiva Pereira

Turma: COINF 2026

6) $\frac{4a^2}{4} = 18 \Rightarrow A = 18^2$
 $A = \boxed{324 \text{ cm}^2}$

7) $h^2 = s^2 - z^2$ $A = (B+b) \cdot h$ $12 - 6 = 6$
 $h^2 = 25 - 9$ $6 = 3$
 $h^2 = 16$ $A = \frac{18 \cdot 4}{2} = \frac{72}{2} = \boxed{36 \text{ cm}^2}$
 $h = \sqrt{16} = 4$

8) a) $A = b \cdot h = 4 \cdot 6 = \boxed{24 \text{ cm}^2}$

b) $\sin 60^\circ \cdot 6 = \frac{\sqrt{3}}{2} \cdot 6 = \frac{6\sqrt{3}}{2} = 3\sqrt{3}$

$A = 8 \cdot 3\sqrt{3} = \boxed{24\sqrt{3} \text{ cm}^2}$

9) a) $\frac{b \cdot h}{2} = \frac{8 \cdot 5}{2} = \frac{40}{2} = \boxed{20 \text{ cm}^2}$

b) $a^2 = b^2 + c^2$ $c^2 = 144$ $A = \frac{12 \cdot 5}{2}$
 $13^2 = 5^2 + c^2$ $c = \sqrt{144}$
 $c^2 = 169 - 25$ $c = 12$ $A = \frac{60}{2} = \boxed{30 \text{ cm}^2}$

c) $A = \frac{\sqrt{3}}{4} a^2 + \frac{6^2 \sqrt{3}}{4} \rightarrow \frac{36\sqrt{3}}{4} + \frac{9\sqrt{3} \text{ cm}^2}{4}$

d) $A = 6 \cdot 8 \cdot \sin 45^\circ = 48 \cdot \frac{\sqrt{2}}{2} = 24\sqrt{2} = \boxed{12\sqrt{2} \text{ cm}^2}$

10) $2x^2 = 450$ $h = x = \boxed{15 \text{ m}}$
 $x^2 = \frac{450}{2} = 225$ $b = 2x = 2 \cdot 15 = \boxed{30 \text{ m}}$

$x = \sqrt{225} = 15$

nome: Gabrielly de Paiva Pereira

Turma: COINP2026

11) $ab = 100$

$a + 10\% = 1,10a$ $1,10 \cdot 0,9 = 0,99$

$b - 10\% = 0,9b$ $0,99 \cdot 100 = \boxed{99 \text{ cm}^2}$

12) a) $h = \frac{8\sqrt{3}}{2} = 4\sqrt{3} \rightarrow \frac{4\sqrt{3}}{3}$

$A_{\text{trapezoidal}} = A_{\text{equilátero}} - A_{\text{círculo}}$

$A = \frac{8^2\sqrt{3}}{4} - \pi \left(\frac{4\sqrt{3}}{3}\right)^2$

$A = 16\sqrt{3} - \frac{16\pi}{3}$

$A = \boxed{\frac{48\sqrt{3} - 16\pi}{3} \text{ cm}^2}$

b) $A_{\text{trapezoidal}} = A_{\square} - A_{\text{círculo}}$

$A = 10^2 - 10^2\pi$

$A = 100 - 100\pi$

$A = 100 - 25\pi$

$A = \boxed{25\pi \text{ cm}^2}$

6) $180^\circ - 60^\circ = 120^\circ \rightarrow \frac{1}{3}$ do círculo

$A = \frac{6^2\pi}{3} = \frac{36\pi}{3} = \boxed{12\pi \text{ cm}^2}$

13) área inicial $\rightarrow 30 \cdot 15 = 450 \text{ cm}^2$

área final $\rightarrow (30-6)(15-3) = 288 \text{ cm}^2$

redução $\rightarrow \frac{450 - 288}{450} = \frac{162}{450} = 0,36 = 36\%$

Letra C.

nome: Gleydely de Paiva Pereira

Turma: COINF 2026

(14) a) $A = \frac{3}{8} \pi r^2 - r \cdot b \cdot \sin 135^\circ$

$A = \frac{64 \cdot 3\pi}{8} - 64 \cdot \frac{\sqrt{2}}{2}$

$A = \frac{192\pi}{8} - 32\sqrt{2}$

$A = 24\pi - 16\sqrt{2} \text{ cm}^2$

ppp

b) $(10-x)^2 + y^2 = (6+x)^2$

3) $36 - 12x + x^2 = 36x + 108$

$144 - 24x + x^2 + y^2 - 36 = 12x + x^2$

$x^2 - 48x + 144 = 0$

5) $108 - 24x + y^2 = 12x$

$y^2 + 108 = 36x$

$x = \frac{48 \pm \sqrt{2304 - 576}}{2}$

$x = \frac{48 + 24\sqrt{3}}{2}$

4)

$y^2 = 36x - 108$

7) $6 = 12 - y - x$

$x = \frac{48 \pm \sqrt{1728}}{2}$

$x = 24 + 12\sqrt{3}$

$-6 = -y - x$

$x = 44,78 \text{ cm}$

$y = 6 - x$

$x = \frac{48 \pm 24\sqrt{3}}{2}$

$x = \frac{48 - 24\sqrt{3}}{2} = 24 - 12\sqrt{3} \approx 3,21 \text{ cm}$

5)

$y^2 = 36 - 12x + x^2$

$A = \pi r^2 = \pi (24 - 12\sqrt{3})^2 = \pi (1008 - 576\sqrt{3})$

$A = 1008\pi - 576\sqrt{3} \text{ cm}^2 \approx 32,48 \text{ cm}^2$

c) $16 = 4 + x^2 - 2x \cos 90^\circ$

$\frac{2\sqrt{3}}{\sin 90^\circ} = \frac{4}{\sin 90^\circ} \rightarrow \frac{2\sqrt{3}}{\sin \theta} = 4 + \sin \theta = \frac{2\sqrt{3} - \sqrt{3}}{4}$

$16 = 4 + x^2 - 0$

$x^2 = 16 - 4$

Ângulo do setor: $2\theta = 2 \cdot 60^\circ = 120^\circ$

$\theta = 60^\circ$

$x^2 = 12$

Área do setor: $A = \frac{1}{2} \theta r^2$

$\sqrt{12} = \sqrt{2^2 \cdot 3} = 2\sqrt{3}$

θ em radianos: $120 \cdot \frac{\pi}{180} = \frac{2\pi}{3}$

$A_{setor} = \frac{1}{2} \left(\frac{2\pi}{3} \right) (16) = \frac{16\pi}{3}$

$A_B = \frac{1}{2} b h = \frac{1}{2} (2x)(2) = \frac{1}{2} (4\sqrt{3})(2) = 4\sqrt{3} \text{ cm}^2$

$A_{AB} = A_{setor} - A_B = \frac{16\pi}{3} - 4\sqrt{3} = \frac{16\pi - 12\sqrt{3}}{3} \text{ cm}^2$

$A_{total} = 2A_{AB} = 2 \left(\frac{16\pi - 12\sqrt{3}}{3} \right) = \frac{32\pi - 24\sqrt{3}}{3} \text{ cm}^2 \approx 19,6539 \text{ cm}^2$

nome: Gabrielly de Paula Pereira Turma: COJNE 2026

(15) $A_1 = y \cdot 5 = 5y$ $A_p = A_1 + A_2$
 $A_2 = (3-y)x = 3x - xy$ $A_p = 5y + 3x - xy \rightarrow$ letra (a)

(16) Branco: $50m^2$; Cinza: $30m^2$ $A = \frac{b \cdot h \cdot \theta}{2} = \frac{0,25 \cdot 0,5 \cdot 4}{2} = 0,25 m^2$

$A = 1m^2$

$A_{cinza} = 1 - 0,25 = 0,75 m^2$

$C = 0,75 \cdot 30 + 0,25 \cdot 50$

$C = 22,50 + 12,50$

$C = R\$ 35,00 \rightarrow$ letra (b)

(17) $b^2 = 1^2 + 1^2 - 2 \cdot \cos 150^\circ$ $A = b^2$

$b = \frac{2 + 2\sqrt{3}}{2}$

$A = (\sqrt{2+\sqrt{3}})^2$

$A = 2 + \sqrt{3} \rightarrow$ letra (c)

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

$b = \sqrt{2 + \sqrt{3}}$

(18) a) $AM, BE, CF, DG = 3x$ $FE, GF, GH, HE = 1,5x^2$
 $AE, BF, CG, HD = x$

$A_{ABCD} = 4x \cdot 4x = 16x^2$

$A_{EFGH} = 16x^2 - 4(1,5x^2) = 16x^2 - 6x^2 = 10x^2$

$R = \frac{A_{EFGH}}{A_{ABCD}} \rightarrow \frac{10x^2}{16x^2} = \frac{10}{16} = \frac{5}{8} \rightarrow$ $EFGH = \frac{5}{8} ABCE$

b) $A = \frac{EFGH}{2} = \frac{\frac{5}{8} \cdot 80}{2} = \frac{50}{2} = 25 cm^2$

nome: Gabrielly de Paiva Pereira

Turma: GJNF 2026

19) a) $(10-2)^2 + 2^2 = l^2$ $A = l^2$

$$8^2 + 4 = l^2$$

$$A = (\sqrt{68})^2$$

$$l = \sqrt{68}$$

$$A = \boxed{68 \text{ m}^2}$$

b) $A = \frac{(10-x)x}{2} = \frac{100 - 4(10-x)x}{2} = \frac{100 - 20x + 2x^2}{2}$

$$A = \boxed{2x^2 - 20x + 100 \text{ m}^2}$$

c) $P_{\text{form}} = P_{\text{retângulo}} + P_{\text{triângulo}} = 4(2x^2 - 20x + 100) + 3(20x - 2x^2)$
 $= 8x^2 - 80x + 400 + 600x - 6x^2$
 $= 2x^2 - 20x + 400$

$$A = 400 - 3200$$

$$A = -2800$$

$$P_{\text{form}} = \frac{A}{4a} = \frac{2800}{8} = \boxed{\text{R\$ } 350,00}$$

Gpp

20) $A = (24 + 18 + 8)^2$

$$A = 100 \text{ cm}^2 \rightarrow \text{letra d)}$$

21) a) $A_{CBE} = A_{EDC}$, pois possuem a mesma base e altura; portanto

Descompondo as áreas:

$$A_{ABC} + A_{ACE} = A_{ADE} + A_{ACE}, \text{ então } A_{ABC} = A_{ADE}$$

Tem a mesma área.

b) $A_{ABC} = \frac{1}{2} CH \cdot h - A_{AGH}$ $A_{ABC} = A_{AGH}$

$$A_{AGH} = \frac{1}{2} CH \cdot h - A_{AGH}$$

$$A_{DEF} = \frac{1}{2} EG \cdot h - A_{DEG}$$

$$A_{DGH} = A_{DEF}$$

$$A_{DGH} = \frac{1}{2} EG \cdot h - A_{DEG}$$

$$A_{AGH} = A_{ABC} + A_{DEF} = 5 + 4 = \boxed{9 \text{ cm}^2}$$

nome: Gabrielly de Paiva Pereira

Turma: COINF 2026

(22) $A_{TOTAL} = 160 \cdot 120 - 50 \cdot 60 = 19200 - 3000 = 16200 \text{ m}^2$

$A_{ABCE} = 8100 + \frac{(AP+50) \cdot 60}{2} = 8100 + 50AP + 2500 = 10600$

$50AP = 5600$

$AP = 112$

Distancia: $120 - 112 = 8 \text{ m}$ → letra (b)

(23) $A_{DEC} = A_{ABCE} - A_{ACD} = A_{BCE} + A_{CED} - A_{ACD}$
 $(EF = h = \frac{\sqrt{3}}{2} \cdot l = \frac{\sqrt{3}}{2} \cdot 8 = 4\sqrt{3})$

$= (6+h) \cdot h + \frac{2 \cdot 4\sqrt{3}}{2} - \frac{6 \cdot 8}{2}$

$= (12+8\sqrt{3}) + (8\sqrt{3}) - (24)$

$= 12 + 16\sqrt{3} - 24$

Cypp

$A_{DEC} = 16\sqrt{3} - 12$

(24) Área de $\frac{2}{3}$ do círculo menor:

$x = \frac{\pi \cdot 1^2 \cdot 2}{3} = \frac{2\pi}{3}$

Área do segmento do círculo maior:

$y = \frac{a}{3} - C_{ABC} = \frac{\pi \cdot 2^2}{3} - \frac{(2\sqrt{3})^2 \cdot \sqrt{3}}{4} = \frac{4\pi}{3} - \sqrt{3}$

Área do quadrilátero formado por segmentos arcos de 1 :

$z = \frac{1 \cdot \sqrt{3}}{2} \cdot 2 = \sqrt{3}$

$C_T = y + x + z$

$C_T = \frac{4\pi}{3} - \sqrt{3} + \frac{2\pi}{3} + \sqrt{3} = \frac{6\pi}{3} = 2\pi$ → letra A

ABC equilatero

ang central 120°

r maior = 2cm

$a = 2\pi \cdot 1$

$a = 2\pi \cdot 1$

$a = 2\pi$

C = circunferência

rência

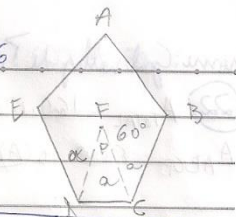
nome: Gabrielly de Paula Pereira Turma: COJNF2026

25) $\triangle FGC = \triangle$ equilátero

DPG = parte da circunferência dividida em 6.

$$S_p = S \cdot (A_{ABC} - A_{FGC})$$

$$S_p = S \left(\frac{60^\circ}{360^\circ} \pi a^2 - \frac{a^2 \sqrt{3}}{4} \right) \rightarrow S \left(\frac{\pi a^2}{6} - \frac{a^2 \sqrt{3}}{4} \right) \rightarrow \frac{5a^2}{2} \left(\frac{\pi}{3} - \frac{\sqrt{3}}{4} \right)$$



26) $A_{ABE} \rightarrow \frac{AB \cdot GE}{2} = \frac{BE \cdot AF}{2}$

$$\frac{12 \cdot 12}{2} = \frac{18 \cdot AF}{2} \rightarrow 6 \cdot 12 = 8 \cdot AF$$

$$(3 \cdot 2) \cdot 4 \cdot 3 = 4 \cdot 2 \cdot AF \rightarrow 3 \cdot 3 = AF$$

$$\boxed{AF = 9}$$

27) FH = GE

$$HO = FO - FH = OE - GE = OG$$

Área do círculo de diâmetro HO = área do círculo de diâmetro de OG

Assim como a de FG e HO é igual a de GO e HE.

Área do círculo de FE:

$$A = \frac{2^2 \pi}{2} = 2\pi \rightarrow \boxed{A = 2\pi}$$

28) $ABMK = CBKM \rightarrow ABCD = \overbrace{ABMK}^{2y} + \overbrace{CBKM}^{2y}$

$$2y = ABCD$$

$$y = \frac{4^2}{2} = \frac{16}{2} = 8 \text{ (CBKM)}$$

Sendo um \triangle isósceles, então

Letra B

$KL = LM \therefore$ o ângulo $\angle BLM =$ ao $\angle LKA$, formando

uma congruência por LAA, o que faz suas áreas serem

iguais. Há então dois trapézios, $ABMK$ e $CBKM$, onde as áreas são:

$$ABMK = \left[\frac{(4-x) + x}{2} \right] \cdot 4 = 16$$

$$\rightarrow ABMK = CBKM$$

$$CBKM = \left[\frac{(4-x) + x}{2} \right] \cdot 4 = 16$$

