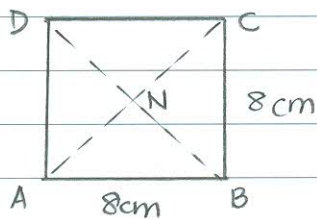


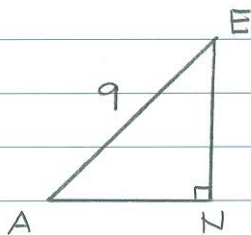
Q7)



$$\begin{aligned} \text{a) } AC^2 &= 8^2 + 8^2 \\ &= 128 \end{aligned}$$

$$\begin{aligned} AN &= \frac{1}{2} AC \\ \therefore AN^2 &= \frac{1}{4} AC^2 \\ &= \frac{1}{4} (128) \\ &= 32 \text{ cm}^2 \# \end{aligned}$$

b)

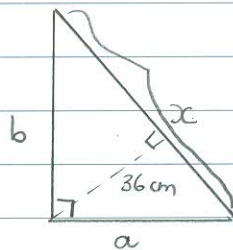


$$AE = 5 + 4 = 9 \text{ cm}$$

$$\begin{aligned} EN^2 &= 9^2 - 32 \\ EN &= 7 \text{ cm} \end{aligned}$$

\therefore E is $7 + 4 = 11$ cm above the table #

Q8)



$$\begin{aligned} a + b + x &= 180 \\ (a + b) &= 180 - x \quad \text{--- (1)} \end{aligned}$$

$$\begin{aligned} \frac{1}{2} \times 36 \times x &= \frac{1}{2} \times a \times b \\ 36x &= ab \quad \text{--- (2)} \end{aligned}$$

$$a^2 + b^2 = x^2 \quad \text{--- (3)}$$

$$\begin{aligned} \text{Fr (1): } (a + b)^2 &= a^2 + b^2 + 2ab \\ (180 - x)^2 &= x^2 + 2(36x) \\ 32400 - 360x + x^2 &= x^2 + 72x \\ 32400 &= 432x \\ x &= 75 \text{ cm} \# \end{aligned}$$

Q9)

$$\begin{aligned} 5^2 &= x^2 + (13 - y)^2 \quad \text{--- (1)} \\ 12^2 &= x^2 + y^2 \quad \text{--- (2)} \end{aligned}$$

$$\text{Fr (2): } x^2 = 144 - y^2 \quad \text{--- (3)}$$

Sub into (1):

$$\begin{aligned} 25 &= 144 - y^2 + 169 - 26y + y^2 \\ 26y &= 288 \\ y &= \frac{144}{13} \end{aligned}$$

$$\Rightarrow x^2 = 144 - \left(\frac{144}{13}\right)^2$$

$$x = \frac{3600}{169}$$

$$x = \frac{60}{13}$$

$$\begin{aligned} \therefore \text{Area} &= \frac{1}{2} \times \frac{60}{13} \times (39 + 52) \\ &= 210 \text{ cm}^2 \# \end{aligned}$$

Q10) $2y + 2x + 12 = 2(10 + 10 + 12)$

$$2y + 2x = 52$$

$$x + y = 26 \quad \text{--- (1)}$$

$$h^2 = 10^2 - 6^2$$

$$h^2 = 64 \Rightarrow h = 8$$

$$y^2 = (x+6)^2 + h^2$$

$$y^2 = (x+6)^2 + 64$$

$$y^2 = x^2 + 12x + 36 + 64 \quad \text{--- (2)}$$

Fr (1), $y = 26 - x \quad \text{--- (3)}$

sub (3) into (2):

$$(26-x)^2 = x^2 + 12x + 100$$

$$676 - 52x + x^2 = x^2 + 12x + 100$$

$$576 = 64x$$

$$x = 9 \text{ cm} = BD \quad \#$$

Q11)

$$a^2 = x^2 + y^2$$

$$b^2 = w^2 + z^2$$

$$a^2 + b^2 = x^2 + y^2 + w^2 + z^2 \quad \text{--- (1)}$$

$$c^2 = x^2 + w^2$$

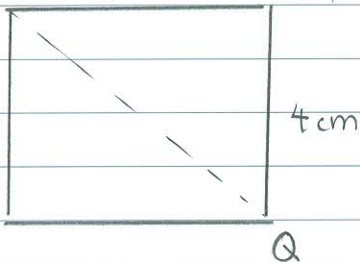
$$d^2 = y^2 + z^2$$

$$\therefore c^2 + d^2 = x^2 + y^2 + w^2 + z^2 \quad \text{--- (2)}$$

$$\Rightarrow a^2 + b^2 = c^2 + d^2 \quad \# \text{ shown.}$$

P 3cm ($\frac{1}{2}$ circumference)

Q12)



shortest dist from P to Q = 5cm #

Q13)

$$EF^2 = 6^2 + (8-2x)^2$$

$$(8-x)^2 = x^2 + 6^2$$

$$64 - 16x + x^2 = x^2 + 36$$

$$28 = 16x$$

$$x = \frac{7}{4}$$

$$\Rightarrow EF^2 = 6^2 + \left(8 - \frac{7}{4}\right)^2$$

$$= 36 + \left(\frac{9}{4}\right)^2$$

$$= \frac{225}{4}$$

$$EF = \frac{15}{2}$$

$$EF = 7.5 \text{ cm} *$$

Q14)

$$r^2 = (r-8)^2 + (r-9)^2$$

$$r^2 = r^2 - 16r + 64 + r^2 - 18r + 81$$

$$r^2 - 34r + 145 = 0$$

$$(r-29)(r-5) = 0$$

$$r = 5 \text{ or } 29$$

(rej)

\(\therefore\) radius is 29 cm *