

## FORM 3

### CHAPTER 5

#### Summative Practice

##### Section A

$$1 \quad \cos y = \frac{4}{5} = \frac{ST}{35}$$

$$ST = \frac{4}{5} \times 35 = 28 \text{ cm}$$

$$RS = \sqrt{35^2 - 28^2} = 21 \text{ cm}$$

$$\tan y = \frac{RS}{ST}$$

$$= \frac{21}{28}$$

$$= \frac{3}{4}$$

Answer: C

$$2 \quad 4 \cos^2 45^\circ + 5 \tan^2 60^\circ = 4 \left( \frac{\sqrt{2}}{2} \right)^2 + 5(\sqrt{3})^2$$

$$= 4 \left( \frac{2}{4} \right) + 5(3)$$

$$= 17$$

Answer: D

$$3 \quad \tan x = \frac{A}{4} = 2 \rightarrow A = 8$$

$$\cos y = \frac{\text{length of adjacent side}}{18} = 0.6$$

$$\text{Length of adjacent side} = 0.6(18) = 10.8$$

$$\text{Length of opposite side} = \sqrt{18^2 - 10.8^2}$$

$$= 14.4$$

$$P = 14.4 - 8$$

$$= 6.4 \text{ cm}$$

Answer: B

$$4 \quad \sin a = \frac{\text{length of opposite side}}{15} = 0.6$$

$$\text{Length of opposite side} = 15(0.6) = 9 \text{ cm}$$

$$\text{Length of adjacent side} = \sqrt{15^2 - 9^2}$$

$$= 12 \text{ cm}$$

$$\text{Length of hypotenuse of the other triangle}$$

$$= \sqrt{5^2 + 12^2} = 13 \text{ cm}$$

$$\cos b = \frac{12}{13}$$

Answer: A

$$5 \quad \sin x = \frac{\sqrt{2}}{2}$$

$$x = 45^\circ$$

$$= \cos x$$

$$\cos(90^\circ - x) = \cos x$$

Answer: B

$$6 \quad \tan \theta = \frac{5}{12} = \frac{QR}{24}$$

$$QR = 10 \text{ cm}$$

$$QS = \sqrt{10^2 + 24^2}$$

$$= 26 \text{ cm}$$

$$= PQ$$

$$PR = QR + PQ$$

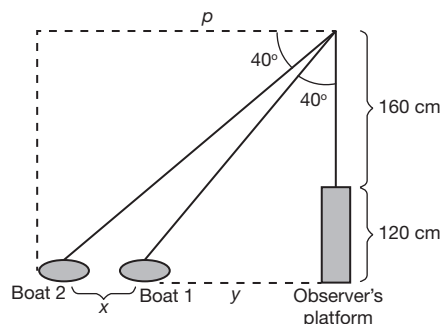
$$= 10 + 26$$

$$= 36 \text{ cm}$$

$$PS = \sqrt{36^2 + 24^2} = 43.3$$

Answer: D

7



$$\tan 40^\circ = \frac{280}{p}$$

$$p = \frac{280}{\tan 40^\circ} = 333.69 \text{ cm}$$

$$\tan 40^\circ = \frac{y}{280}$$

$$y = 280 (\tan 40^\circ) = 234.95 \text{ cm}$$

$$\text{Distance between two boats, } x = 333.69 - 234.95$$

$$= 98.7 \text{ cm}$$

Answer: C

$$8 \quad \cos \angle QPR = \frac{15}{17} = \frac{PQ}{PQ}$$

$$PQ = 17 \text{ m}$$

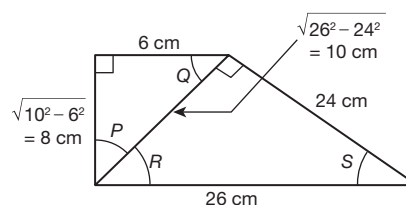
$$QR = \sqrt{17^2 - 15^2} = 8 \text{ m}$$

$$QT = \sqrt{15^2 + 20^2} = 25 \text{ m}$$

$$\cos \theta = \frac{QS}{QT} = \frac{20}{25} = \frac{4}{5}$$

Answer: B

9



$$\cos P = \frac{8}{10} = 0.8$$

Answer: A

$$10 \quad \tan x = \frac{4}{3} = \frac{8}{AP}$$

$$AP = 8 \times \frac{3}{4} = 6 \text{ cm}$$

$$AQ = \sqrt{8^2 + 6^2} = 10 \text{ cm}$$

$$\tan x = \frac{4}{3} = \frac{12}{AB}$$

$$AB = 12 \times \frac{3}{4} = 9 \text{ cm}$$

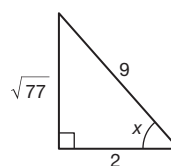
$$AC = \sqrt{9^2 + 12^2} = 15 \text{ cm}$$

$$QC = 15 - 10 = 5 \text{ cm}$$

Answer: A

##### Section B

1 (a)



$$(i) \tan x = \frac{\sqrt{77}}{2}$$

$$(ii) \sin x = \frac{\sqrt{77}}{9}$$

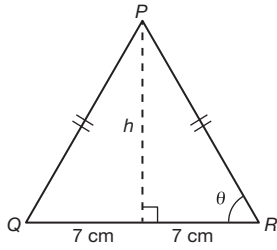
$$(b) (i) \frac{\sin x}{\cos x} = \tan x$$

False

(ii) True

### Section C

1 (a)



$$(i) \cos \theta = \frac{1}{3} = \frac{7}{PR}$$

$$PR = 21 \text{ cm}$$

$$h = \sqrt{21^2 - 7^2}$$

$$= \sqrt{392}$$

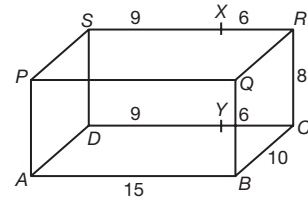
$$= \sqrt{196(2)}$$

$$= 14\sqrt{2} \text{ cm}$$

$$(ii) \tan \theta = \frac{h}{7}$$

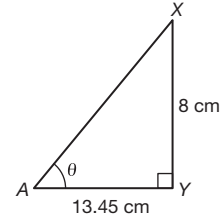
$$= \frac{14\sqrt{2}}{7} = 2\sqrt{2}$$

(b)



$$(i) AY = \sqrt{9^2 + 10^2} = 13.45 \text{ cm}$$

(ii) Angle between lines AX and AY =  $\angle XAY$



$$\tan \theta = \frac{8}{13.45} = 0.595$$

$$\theta = \tan^{-1} 0.595$$

$$= 30.8^\circ$$

$$(c) (i) \sin 58^\circ = \frac{250}{x}$$

$$x = \frac{250}{\sin 58^\circ} = 294.8 \text{ cm}$$

$$(ii) \tan 58^\circ = \frac{250}{y}$$

$$y = \frac{250}{\tan 58^\circ} = 156.2 \text{ cm}$$

Height of wall

$$= 156.2 \text{ cm} + 100 \text{ cm}$$

$$= 256.2 \text{ cm}$$