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Home assignment

1. State True or False:

i) A line segment 4cm long can have only 2000 points it it. False
ii) A ray has one and point and a line segment has two end-points True
iii) A line segment is the shortest distance between any two given points. True
iv) An infinite number of straight lines can be drawn through a given point True
v) Write the number of end points in
a) a line segment $\overline{AB}$ = 2
b) a ray $\overrightarrow{AB}$ = 1
c) a line $\overleftrightarrow{AB}$ = 0
vi) Out of $\overrightarrow{AB}$, $\overrightarrow{BA}$, $\overleftrightarrow{AB}$ and $\overline{AB}$ which one has a fixed length?
ans $\overline{AB}$
vii) How many rays can be drawn through a fixed point O?
ans Infinite
viii) How many lines can be drawn through three
a) Collinear Points? = 1
b) non-collinear Points? => 3
ix) Is 40° the complement of 60°? ans => False, 40° is the complement of 50° as 40°+50°=90°
x) Is 45° the supplement of 45°? ans => False, 45° is the supplement of 135°, not 45°

2. In which of the following figures, are ∠AOB and ∠AOC adjacent angles? Give, in each case, reason for your answer

i) If ∠AOB and ∠AOC are adjacent angles if they have OA their common arm. In the Figure, OB is their common arm ∴ ∠AOB and ∠AOC are not adjacent angles
ii) If ∠AOB and ∠AOC are adjacent angles if they have OA their common arm. In the Figure, OC is their common arm ∴ ∠AOB and ∠AOC are not adjacent angles
iii) If ∠AOB and ∠AOC are adjacent angles if they have OA their common arm. ∴ ∠AOB and ∠AOC are adjacent angles.
iv) If ∠AOB and ∠AOC are adjacent angle if they have OA their common arm in this Figure, OB is their common arm ∴ ∠AOB and ∠AOC are not adjacent angles

3. $\angle AOB$ and $\angle COB$ are linear pairs

$\angle AOB + \angle COB = 180°$

$\Rightarrow x + 25° + 3x + 15° = 180°$

$\Rightarrow 4x + 40° = 180°$

$\Rightarrow 4x = 180° - 40° = 140°$

i) $\Rightarrow x = \frac{140°}{4} = 35$, Hence, $x = 35°$

ii) $\angle AOB = x + 25° = 35° + 25° = 60°$

iii) $\angle BOC = 3x + 15° = 3 \times 35° + 15°$

$= 105° + 15° = 120°$

4. AOC is a Straight line

$\angle AOB + \angle BOD + \angle DOC = 180°$

$\Rightarrow y + 150° - x + x = 180°$

$\Rightarrow y = 180° - 150° = 30°$

Hence, $y = 30°$