

Points, Lines, Planes, and Angle Relationships: math test solutions, Grade 10 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Vocabulary

/ 3 pts

(a) Two points. (1 pt) (b) Three. (1 pt) (c) The segment has two endpoints and a finite length; the ray has one endpoint at A and extends forever through B . (1 pt)

2 Segment addition

/ 3 pts

$(4x - 3) + (2x + 9) = 48$, so $6x + 6 = 48$ and $x = 7$. (1 pt) $RS = 25$ cm (1 pt) and $ST = 23$ cm (1 pt). Check: $25 + 23 = 48$.

3 Coordinates

/ 4 pts

(a) $\left(\frac{-2 + 10}{2}, \frac{-1 + 8}{2}\right) = (4, 3.5)$. (2 pts) (b) $PQ = \sqrt{12^2 + 9^2} = \sqrt{225} = 15$ units. (2 pts)

4 Adding angles

/ 4 pts

(a) $6x + 12 = 132$, so $x = 20$. (2 pts) (b) 44° , 54° , 34° ; the sum is 132° . (1 pt) (c) A bisector would make 66° with OA . $m\angle AOB = 44^\circ$ and $m\angle AOC = 98^\circ$, so neither does. (1 pt)

5 Vertical angles

/ 3 pts

Vertical angles are equal: $7x - 4 = 4x + 23$, so $x = 9$. (1 pt) $m\angle 1 = 7(9) - 4 = 59^\circ$. (1 pt) $\angle 2$ forms a linear pair with $\angle 1$: $m\angle 2 = 180 - 59 = 121^\circ$. (1 pt)

6 Construction

/ 3 pts

Open the compass to more than half of AB (1 pt). With the same opening, draw arcs centered at A and at B that meet above and below the segment, then draw the line through those two points (1 pt). It meets $\overline{AB}$ at its midpoint and is perpendicular to it. (1 pt)



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