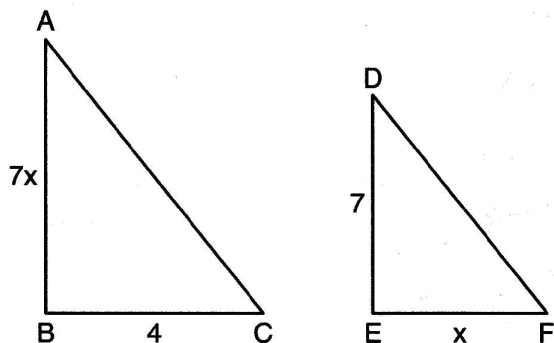
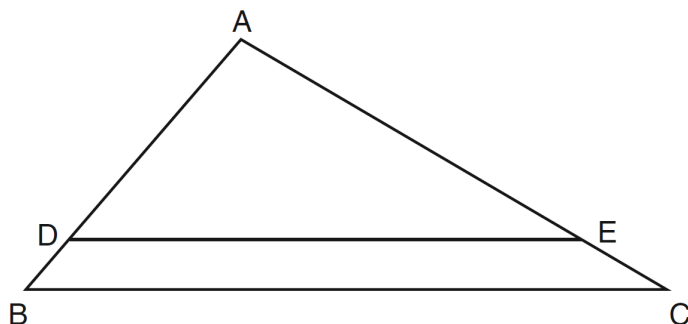


1. Base your answer to the following question on As shown in the diagram below, $\triangle ABC \sim \triangle DEF$, $AB = 7x$, $BC = 4$, $DE = 7$, and $EF = x$.



What is the length of \overline{AB} ?

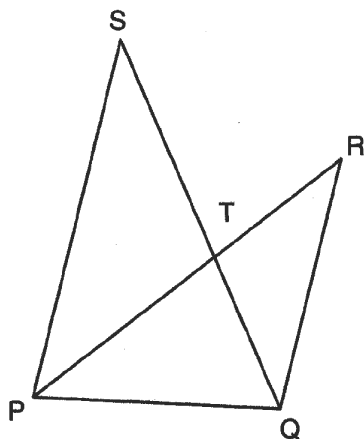
- (1) 28 (2) 4 (3) 2 (4) 14
2. In triangle ABC and DEF , $AB = 4$, $AC = 5$, $DE = 8$, $DF = 10$, and $\angle A \cong \angle D$. Which method could be used to prove $\triangle ABC \sim \triangle DEF$?
- (1) SSS (2) AA (3) SAS (4) ASA
3. The coordinates of the vertices of a triangle are (1,1), (3,1), and (3,5). The triangle formed is
- (1) an equilateral triangle (2) an isosceles triangle
(3) a right triangle (4) an obtuse triangle
4. If two angles of one triangle are congruent to two angles of another triangle, then how *must the* triangles be described?
- (1) scalene (2) isosceles (3) similar (4) congruent
5. In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$.



If $AB = 10$, $AD = 8$, and $AE = 12$, what is the length of \overline{EC} ?

- (1) 6 (2) 2 (3) 3 (4) 15
-

6. In the diagram below, \overline{SQ} and \overline{PR} intersect at T , \overline{PQ} is drawn, and $\overline{PS} \parallel \overline{QR}$.



Which technique can be used to prove $\triangle PST \sim \triangle RQT$?

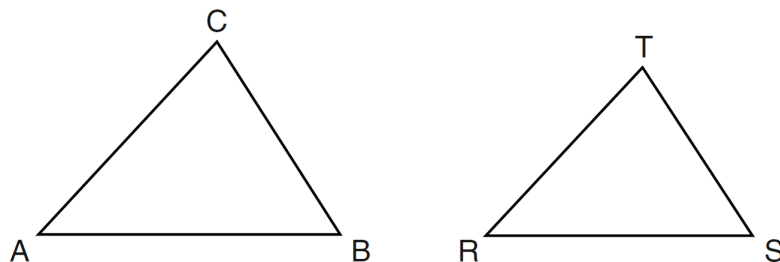
- (1) SSS (2) AA (3) ASA (4) SAS

7. In right triangle ABC , angle C is the right angle.

If the coordinates of A are $(-1,1)$ and the coordinates of B are $(4,-2)$, the coordinates of C may be

- (1) $(-1,2)$ (2) $(1,-2)$ (3) $(-1,-2)$ (4) $(1,2)$

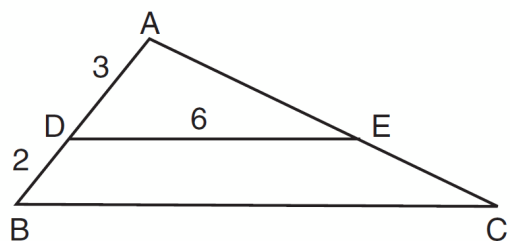
8. In the diagram below, $\triangle ABC \sim \triangle RST$.



Which statement is *not* true?

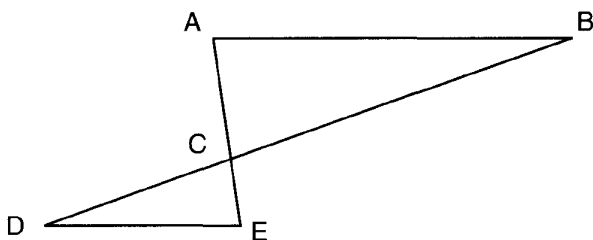
- (1) $\angle A \cong \angle R$ (2) $\frac{AB}{BC} = \frac{ST}{RS}$
 (3) $\frac{AB}{RS} = \frac{BC}{ST}$ (4) $\frac{AB+BC+AC}{RS+ST+RT} = \frac{AB}{RS}$

9. In the diagram of $\triangle ABC$ below, $\overline{DE} \parallel \overline{BC}$, $AD = 3$, $DB = 2$, and $DE = 6$.



What is the length of \overline{BC} ?

- (1) 12 (2) 10 (3) 8 (4) 4
10. Two triangles are similar, and the ratio of each pair of corresponding sides is 2 : 1. Which statement regarding the two triangles is *not* true?
- (1) Their perimeters have a ratio of 2 : 1.
 (2) Their altitudes have a ratio of 2 : 1.
 (3) Their areas have a ratio of 4 : 1.
 (4) Their corresponding angles have a ratio of 2 : 1.
11. In the diagram of $\triangle ABC$ and $\triangle EDC$ below, \overline{AE} and \overline{BD} intersect at C , and $\angle CAB \cong \angle CED$.



Which method can be used to show that $\triangle ABC$ must be similar to $\triangle EDC$?

- (1) HL (2) SSS (3) AA (4) SAS
12. In $\triangle ABC$ and $\triangle DEF$, $\frac{AC}{DF} = \frac{CB}{FE}$. Which additional information would prove $\triangle ABC \sim \triangle DEF$?
- (1) $AC = DF$ (2) $CB = FE$
 (3) $\angle BAC \cong \angle EDF$ (4) $\angle ACB \cong \angle DFE$
13. The vertices of rectangle $ABCD$ are $A(3,1)$, $B(-5,1)$, $C(-5,-3)$, and D . What are the coordinates of D ?
- (1) $(3,-3)$ (2) $(-3,-3)$ (3) $(3,3)$ (4) $(-3,3)$

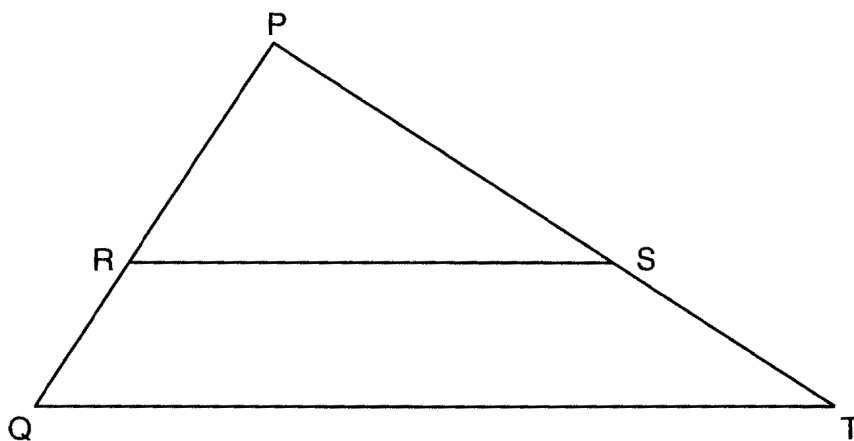
14. When two parallel lines are cut by a transversal, which angles are *not* always congruent?

- (1) a pair of alternate interior angles
- (2) a pair of alternate exterior angles
- (3) two corresponding angles
- (4) two interior angles on the same side of the transversal

15. Triangle ABC is similar to triangle DEF . The lengths of the sides of $\triangle ABC$ are 5, 8, and 11. What is the length of the shortest side of $\triangle DEF$ if its perimeter is 60?

- (1) 10
- (2) 12.5
- (3) 20
- (4) 27.5

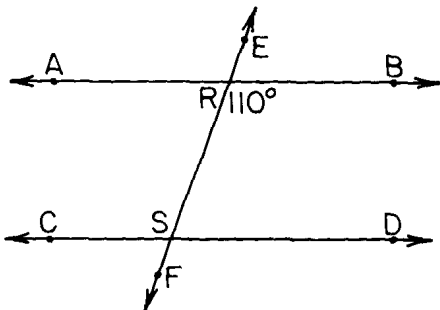
16. Triangle PQT with $\overline{RS} \parallel \overline{QT}$ is shown below.



If $PR = 12$, $RQ = 8$, $PS = 21$, what is the length of \overline{PT} ?

- (1) 14
- (2) 17
- (3) 35
- (4) 38

17. In the accompanying diagram, parallel lines \overleftrightarrow{AB} and \overleftrightarrow{CD} are intersected by transversal \overleftrightarrow{EF} at R and S , respectively. If $m\angle BRS = 110$, find $m\angle RSD$.

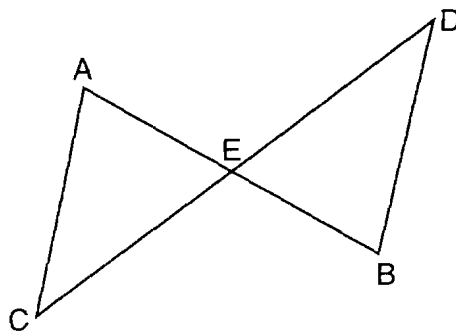


- (1) 85
- (2) 65
- (3) 110
- (4) 70

18. In $\triangle ABC$, point D is on \overline{AB} , and point E is on \overline{BC} such that $\overline{DE} \parallel \overline{AC}$. If $DB = 2$, $DA = 7$, and $DE = 3$, what is the length of \overline{AC} ?

(1) 8 (2) 13.5 (3) 10.5 (4) 9

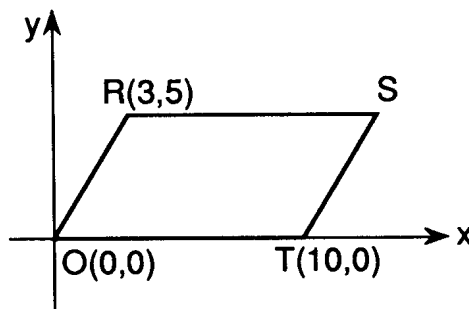
19. Base your answer to the following question on In the accompanying diagram, E is the midpoint of \overline{AB} and \overline{CD} .



Triangle AEC can be proved congruent to triangle BED by

(1) $ASA \cong ASA$ (2) $SAS \cong SAS$
 (3) $SSS \cong SSS$ (4) $AAS \cong AAS$

20. Base your answer to the following question on In the accompanying diagram of parallelogram $ORST$, the coordinates of vertices O , R , and T are $(0,0)$, $(3,5)$, and $(10,0)$, respectively.



What are the coordinates of vertex S ?

(1) $(10,5)$ (2) $(7,5)$ (3) $(13,0)$ (4) $(13,5)$

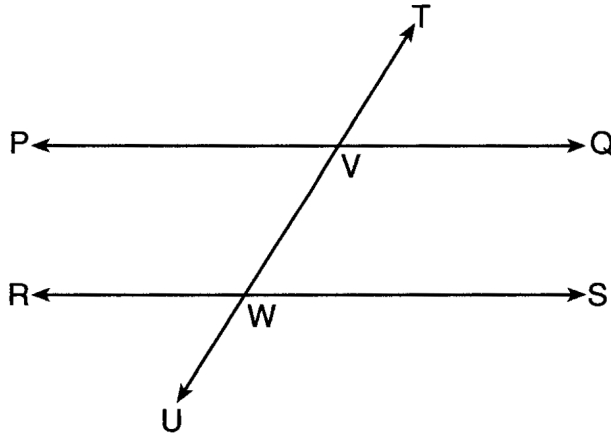
21. What is the length of a line segment whose endpoints have coordinates $(5,3)$ and $(1,6)$?

(1) 5 (2) 25 (3) $\sqrt{17}$ (4) $\sqrt{29}$

22. The endpoints of \overline{CD} are $C(-2,4)$ and $D(6,2)$. What are the coordinates of the midpoint of \overline{CD} ?

(1) $(4, 3)$ (2) $(4, -2)$ (3) $(2, 3)$ (4) $(2, -1)$

23. In the diagram below, transversal \overleftrightarrow{TU} intersects \overleftrightarrow{PQ} and \overleftrightarrow{RS} at V and W , respectively.



If $m\angle TVQ = 5x - 22$ and $m\angle VWS = 3x + 10$, for which value of x is $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$?

- (1) 6 (2) 16 (3) 24 (4) 28

24. When a quadrilateral is reflected over the line $y = x$, which geometric relationship is *not* preserved?

- (1) congruence (2) perpendicularity
(3) parallelism (4) orientation