BECA / Mr. Huson / Geometry Name: .

January 9, 2017 Pre-test problems: Triangle Congruence

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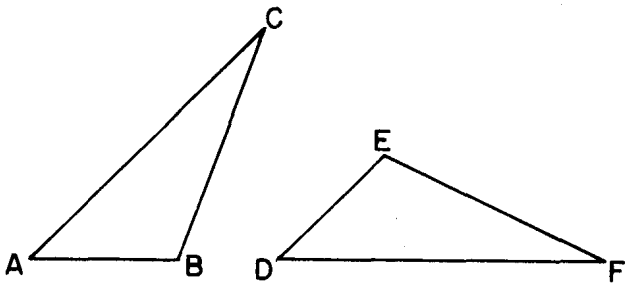
1. The endpoints of $\overline{CD}$ are $C(-2,-4)$ and $D(6,2)$. What are the coordinates of the midpoint of $\overline{CD}$?

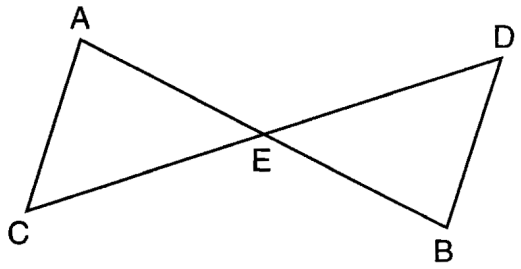
   (1) (2,3) (2) (2, –1) (3) (4, –2) (4) (4, 3)

2. In the accompanying diagram, *ABC* and *DEF* are triangles with $\angle A \cong \angle D$, *and* $\overline{AC} \cong \overline{DF}$. *Which statement is sufficient to prove* $\Delta ABC \cong \Delta DEF$*?*



   (1) $\angle C \cong \angle F$ (2) $\angle C \cong \angle E$ (3) $\overline{CB} \cong \overline{EF}$ (4) $\overline{AC} \parallel \overline{DE}$

3. In the diagram below, $\Delta AEC \cong \Delta BED$



   Which statement is *not* always true?

   (1) $\overline{AC} \cong \overline{BD}$ (2) $\overline{CE} \cong \overline{DE}$
   (3) $\angle EAC \cong \angle EBD$ (4) $\angle ACE \cong \angle DBE$

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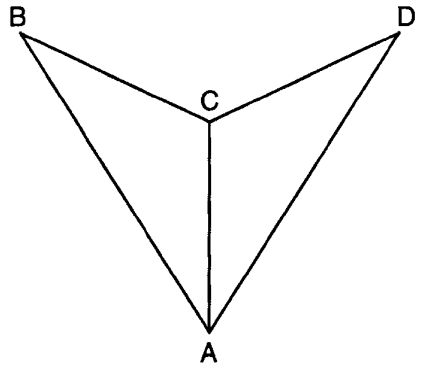
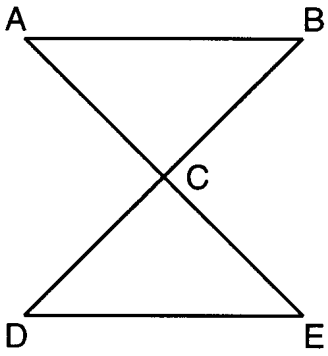
5. Base your answer to the following question on As shown in the diagram below, $\overline{AC}$ bisects $\angle BAD$ *and* $\angle B \cong \angle D$.



Which method could be used to prove $\Delta ABC \cong \Delta ADC$?

(1) SSS (2) AAA (3) SAS (4) AAS

6. Base your answer to the following question on In the accompanying diagram, $\overline{ACE}$, $\overline{BCD}$, $\overline{AB}$, and $\overline{DE}$, $\angle A \cong \angle E$, *and C is the midpoint of* $\overline{AE}$.



Which theorem justifies $\Delta ABC \cong \Delta EDC$?

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

7. Line segment *AB* has endpoints *A*(2,–3) and *B*(–4,6). What are the coordinates of the midpoint of $\overline{AB}$?

(1) (–2,3) (2) $(-1,1\frac{1}{2})$ (3) (–1,3) (4) $(3,4\frac{1}{2})$

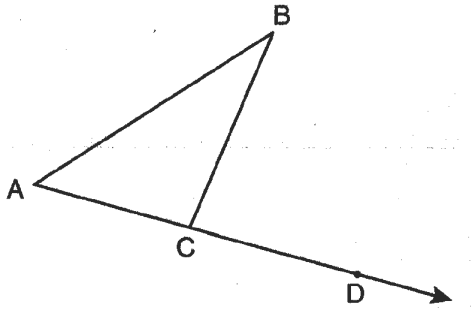
8. Which point is closest to the origin?

(1) (5,12) (2) (6,8) (3) (10,4) (4) (0,11)

9. Two triangles are congruent if

(1) corresponding angles are congruent
(2) corresponding sides and corresponding angles are congruent
(3) the angles in each triangle have a sum of 180º
(4) corresponding sides are proportional

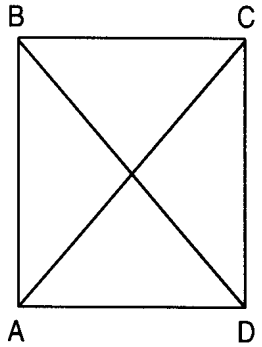
10. Base your answer to the following question on In the diagram below, ΔABC is shown with $\overline{AC}$ extended through point *D*.



If $\angle BCD = 6x + 2$, $\angle BAC = 3x + 15$, and $\angle ABC = 2x - 1$, what is the value of x?

(1) 12 (2) $14\frac{10}{11}$ (3) 16 (4) $18\frac{1}{9}$

11. Base your answer to the following question on In the accompanying diagram of rectangle ABCD, m∠BAC = $3x + 4$ and m∠ACD = $x + 28$.



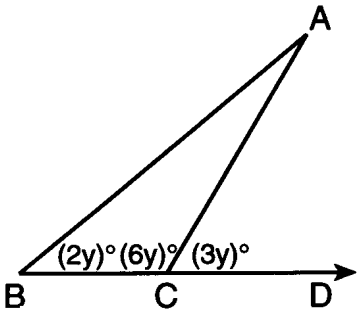
What is m∠CAD?

(1) 12 (2) 37 (3) 40 (4) 50

12. What is the converse of "If an angle measures 90 degrees, then it is a right angle"?

    (1) If an angle is a right angle, then it measures 90 degrees.
    (2) An angle is a right angle if it measures 90 degrees.
    (3) If an angle is not a right angle, then it does not measure 90 degrees.
    (4) If an angle does not measure 90 degrees, then it is not a right angle.

13. In the accompanying diagram of ΔABC, *side* $\overline{BC}$ *is extended to D,* $m\angle B = 2y$, $m\angle BCA = 6y$, *and* $m\angle ACD = 3y$.



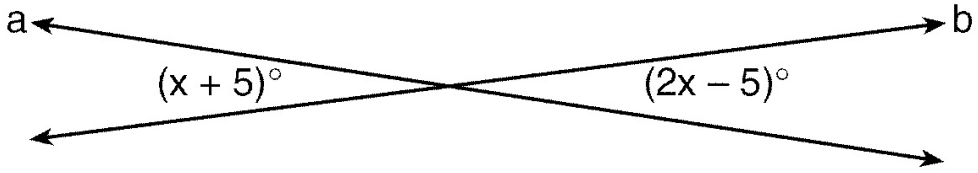
What is $m\angle A$?

(1) 15 (2) 17 (3) 20 (4) 24

14. The statement "***x*** is a multiple of 3, and ***x*** is an even integer" is true when ***x*** is equal to

(1) 9 (2) 8 (3) 3 (4) 6

15. In the accompanying diagram, line *a* intersects line *b*.



What is the value of *x*?

(1) –10 (2) 5 (3) 10 (4) 90

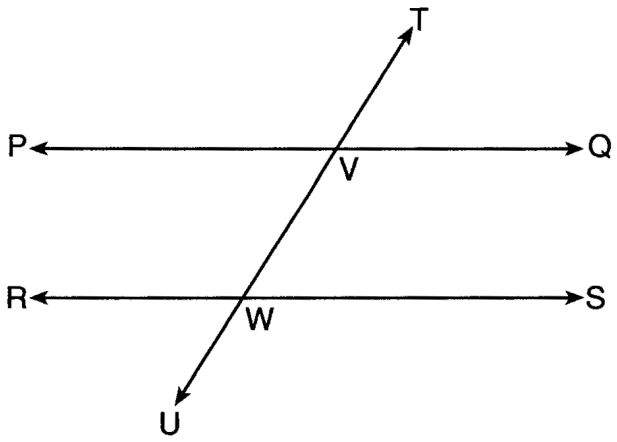
16. A line segment has endpoints (4,7) and (1,11). What is the length of the segment?

(1) 5 (2) 7 (3) 16 (4) 25

17. When writing a geometric proof, which angle relationship could be used alone to justify that two angles are congruent?

(1) supplementary angles (2) linear pair of angles
(3) adjacent angles (4) vertical angle

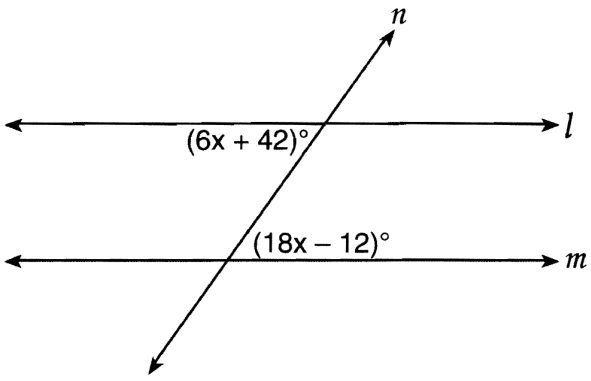
18. In the diagram below, transversal $\overleftrightarrow{TU}$ intersects $\overleftrightarrow{PQ}$ and $\overleftrightarrow{RS}$ at *V* and *W*, respectively.



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

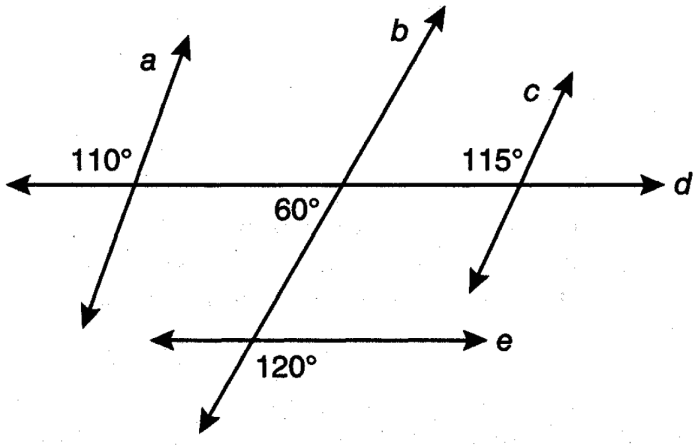
19. Base your answer to the following question on Line *n* intersects lines *l* and *m*, forming the angles shown in the diagram below.



Which value of *x* would prove $l \parallel m$?

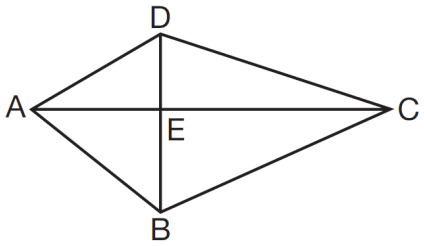
(1) 2.5 (2) 4.5 (3) 6.25 (4) 8.75

20. Based on the diagram below, which statement is true?



(1) $a \parallel b$ (2) $a \parallel c$ (3) $b \parallel c$ (4) $d \parallel e$

22. In the diagram below of quadrilateral *ABCD*, diagonals $\overline{AEC}$ and $\overline{BED}$ are perpendicular at *E*.



Which statement is always true based on the given information?

(1) $\overline{DE} \cong \overline{EB}$ (2) $\overline{AD} \cong \overline{AB}$
(3) $\angle DAC \cong \angle BAC$ (4) $\angle AED \cong \angle CED$

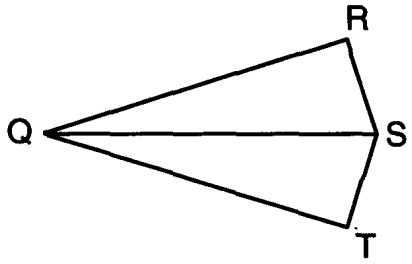
24. A line segment has endpoints *A*(7,-1) and *B*(-3,3). What are the coordinates of the midpoint of $\overline{AB}$?

(1) (1,2) (2) (2,1) (3) (-5,2) (4) (5,-2)

25. Which compound statement is true?

(1) A triangle has three sides and a quadrilateral has five sides.
(2) A triangle has three sides if and only if a quadrilateral has five sides.
(3) If a triangle has three sides, then a quadrilateral has five sides.
(4) A triangle has three sides or a quadrilateral has five sides.

26. Base your answer to the following question on In the accompanying diagram of quadrilateral *QRST*, $\overline{RS} \perp \overline{ST}$, $\overline{SR} \cong \overline{OR}$, *and* $\overline{ST} \perp \overline{QT}$.



Which method of proof may be used to prove $\Delta QRS \cong \Delta QTS$?

(1) HL (2) SAS (3) AAS (4) ASA

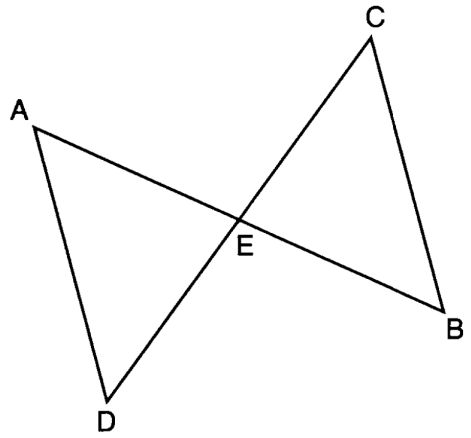
27. What is the equation of a line passing through the point (6,1) and parallel to the line whose equation is $3x = 2y + 4$?

(1) $y = -\frac{2}{3}x + 5$ (2) $y = -\frac{2}{3}x - 3$
(3) $y = \frac{3}{2}x - 8$ (4) $y = \frac{3}{2}x - 5$

28. Which equation represents a line that is parallel to the line whose equation is $3x - 2y = 7$?

(1) $y = -\frac{3}{2}x + 5$ (2) $y = -\frac{2}{3}x + 4$
(3) $y = \frac{3}{2}x - 5$ (4) $y = \frac{2}{3}x - 4$

29. In the diagram below of ΔDAE and ΔBCE, $\overline{AB}$ and $\overline{CD}$ intersect at *E*, such that $\overline{AE} \cong \overline{CE}$ and $\angle BCE \cong \angle DAE$.



Triangle *DAE* can be proved congruent to triangle *BCE* by

(1) ASA (2) SAS (3) SSS (4) HL