Standardized Test Questions (Chapter 1)

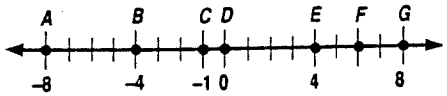
Choose the best answer. Write A, B, C, or D.

1. Find SR.

A. 7 **B.** -2
C. 9 **D.** 5

1. _____

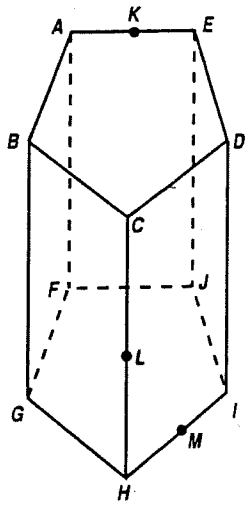
2. The midpoint of segment BC has coordinate



A. -1.5 **B.** 0
C. $-2\frac{1}{2}$ **D.** 1

2. _____

For questions 3 to 5, refer to the figure at the right.



3. How many planes are shown in the figure?
A. 6 **B.** 7
C. 1 **D.** 0

3. _____

4. Name the intersection of planes ABG and CHG.
A. $\overleftrightarrow{AB}$ **B.** $\overline{BG}$
C. $\angle BGH$ **D.** $\overleftrightarrow{BG}$

4. _____

5. Name the intersection of plane ABC and $\overleftrightarrow{HL}$.
A. C **B.** B **C.** L **D.** H

5. _____

6. Find the measure of $\overline{BE}$ if C is between B and E, $BC = 17$, and $CE = 6.5$.
A. 23.5 **B.** 24 **C.** 23 **D.** 17

6. _____

7. What must be true of two segments that have equal lengths?
A. collinear **B.** coplanar
C. congruent **D.** perpendicular

7. _____

8. What are the coordinates of the midpoint of the segment with endpoints $M(-1, -2)$, $N(0.5, 1.5)$?
A. $(-2, 5)$ **B.** $(0.5, 1)$ **C.** $(-1, 1.5)$ **D.** $(-0.25, -0.25)$

8. _____

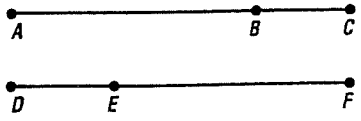
9. If two complementary angles have measures of $4x + 14$ and $3x - 22$, the smaller angle has a measure of
A. 14 **B.** 20 **C.** 56 **D.** 90

9. _____

10. Five times the measure of an angle is 48 more than the measure of its supplement. The measure of the angle is
A. 142 **B.** 38 **C.** 180 **D.** 48

10. _____

11. Which conjecture is always true based on the given information?
Given: $\overline{AC} \cong \overline{DF}$
$\overline{BC} \cong \overline{DE}$



A. $\overline{AB} \cong \overline{EF}$ **B.** $\overline{AB} \cong \overline{DE}$
C. $\overline{BC} \cong \overline{EF}$ **D.** $\overline{AC} \cong \overline{EF}$

11. _____

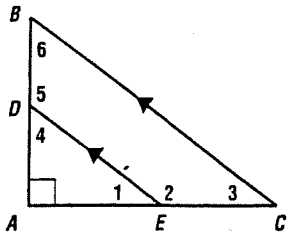
12. Suppose point P and lines ℓ and m all lie in the same plane. If the distance from P to ℓ and from P to m is 3, which of the following *could* be true?
A. $\ell \parallel m$ **B.** $\ell \perp m$ **C.** $\ell = m$ **D.** any of these 12. _____

13. Point B is 5 units from point A on a number line. If the coordinate of point A is –2, what are the possible coordinates for point B?
A. –5 or 5 **B.** –7 or 3 **C.** 3 or 7 **D.** –3 or 3 13. _____

14. The measure of an angle is $5x + 14$ and the measure of its complement is $3x - 20$. Find the value of x.
A. 12 **B.** 96 **C.** 6 **D.** 15 14. _____

15. Name the property of equality that justifies the statement below.
If $m\angle A = m\angle B$ and $m\angle B = m\angle C$, then $m\angle A = m\angle C$.
A. reflexive **B.** symmetric **C.** transitive **D.** congruence 15. _____

16. Refer to the figure on the right. Name the segment that represents the distance from D to $\overline{AC}$.
A. $\overline{AD}$
B. $\overline{AE}$
C. $\overline{DE}$
D. $\overline{DB}$



16. _____

17. Points $A(3, 5)$ and $B(-1, -3)$ lie on the line $y = 2x - 1$. Determine which of the following points is collinear to A and B.
A. (4, 6) **B.** (–3, –1) **C.** (1, 1) **D.** (3, –3) 17 _____

18. Suppose $\angle 1$ and $\angle 2$ are alternate interior angles formed by parallel lines n and p and transversal t. Which of the following must be true?
A. $\angle 1$ and $\angle 2$ are complementary **B.** $\angle 1$ and $\angle 2$ are congruent
C. $\angle 1$ and $\angle 2$ are supplementary **D.** $\angle 1$ and $\angle 2$ have a common vertex 18. _____

19. Determine the value of r so that a line through $(r, 3)$ and $(7, 4)$ has a slope of $\frac{1}{2}$.
A. 7 **B.** 5 **C.** –1 **D.** 2 19. _____

20. Find the slope of any line perpendicular to the line through $(-1, 5)$ and $(0, -3)$.
A. $\frac{1}{8}$ **B.** –8 **C.** $-\frac{1}{8}$ **D.** 8 20. _____

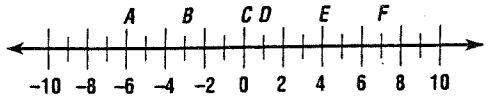
21 Find the measure of $\overline{KL}$ if K is between J and L, $JK = 5x - 3$, $KL = 7x + 8$, and $JL = 65$.
A. 22 **B.** 65 **C.** 50 **D.** 43 21 _____

22 If $S(0, 2)$ is the midpoint of $\overline{RT}$ and the coordinates of T are $(3, 5)$, find the coordinates of R.
A. $(-3, -1)$ **B.** $(-3, 1)$ **C.** $(6, 8)$ **D.** $(-2, 0)$ 22 _____

23 What is the y-coordinate of any point collinear to $A(-3, 1)$ and $C(2, 1)$?
A. –2 **B.** 1 **C.** 3 **D.** 2 23 _____

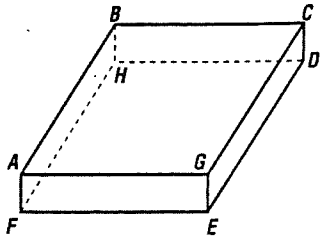
24 The measure of an angle is one-fourth the measure of its supplement. Find the measure of the angle.
A. 144 **B.** 36 **C.** 54 **D.** 17 24 _____

Refer to the number line below to answer each question.



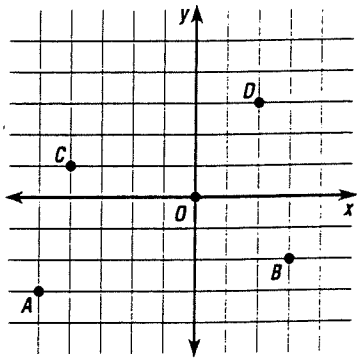
1. What is the coordinate of point D? 1. _____
2. What is the measure of $\overline{BE}$? 2. _____
3. What is the coordinate of the midpoint of $\overline{AE}$? 3. _____
4. *True* or *false*: $\overline{AD} \cong \overline{CF}$. 4. _____
5. *True* or *false*: $BD > EF$. 5. _____

Refer to the figure, which shows a rectangular box. Determine whether each statement is true or false.



6. $\overline{AB} \parallel \overline{ED}$ 6. _____
7. D, E, and F are collinear. 7. _____
8. $\overline{GE} \perp \overline{EF}$. 8. _____
9. $\overline{AG}$ and $\overline{FH}$ are skew lines. 9. _____

Refer to the figure to answer each question.



10. What ordered pair names point A? 10. _____
11. What is the measure of $\overline{BD}$? 11. _____
12. What are the coordinates of the midpoint of $\overline{CD}$? 12. _____
13. What is the slope of $\overline{AC}$? 13. _____
14. What is the slope of any line parallel to $\overline{BD}$? 14. _____
15. What is the slope of any line perpendicular to $\overline{AB}$? 15. _____

16. $\angle K$ and $\angle J$ are complementary angles. $m\angle K = 19$. Find $m\angle J$.
A. 71 **B.** 161 **C.** 90 **D.** 9 16. _____

17. In isosceles triangle PQR, $\angle P$ is the vertex angle. If $m\angle Q = 8x - 3$ and $m\angle R = 2x + 15$, find the measure of $\angle P$.
A. 3 **B.** 21 **C.** 42 **D.** 138 17. _____

18. Classify the triangle XYZ with vertices $X(1, 3)$, $Y(-3, -2)$, $Z(5, -2)$.
A. right **B.** isosceles **C.** scalene **D.** equilateral 18. _____

19. The measure of the vertex angle of an isosceles triangle is 120. What is the measure of a base angle?
A. 60 **B.** 30 **C.** 35 **D.** 40 19. _____

1. A right triangle must be
   A. isosceles. **B.** acute.
   C. scalene. **D.** either isosceles or scalene. 1. _____

2. Find the measure of the legs of an equilateral triangle PQR if $PQ = 5x - 7$ and $PR = 2x + 5$.
   A. 39 **B.** 13 **C.** 12 **D.** 4 2. _____

3. In $\triangle ABC$, what is the angle opposite $\overline{AB}$?
   A. $\overline{CA}$ **B.** $\angle A$ **C.** $\angle B$ **D.** $\angle C$ 3. _____

4. In $\triangle DEF$, if $\overline{DE} \cong \overline{DF}$ and $\overline{EF}$ is the hypotenuse, then $\triangle DEF$ is
   A. acute and scalene. **B.** right and scalene.
   C. right and isosceles. **D.** obtuse and isosceles. 4. _____

5. The measures of two angles of a triangle are 38 and 47. What is the measure of the third angle?
   A. 85 **B.** 95 **C.** 133 **D.** 142 5. _____

6. For $\triangle XYZ$, $\angle 1$, $\angle 2$, and $\angle 3$ are exterior angles with vertices at X, Y, and Z, respectively. The sum of the measures of $\angle 1$, $\angle 2$, and $\angle 3$ is equal to
   A. 90 **B.** 180 **C.** 270 **D.** 360 6. _____

7. If $\triangle IGH \cong \triangle KLJ$, then $\angle H$ is congruent to
   A. $\angle J$ **B.** $\angle I$ **C.** $\angle K$ **D.** $\angle L$ 7. _____

8. Given $\triangle MON \cong \triangle PQR$ with $MO = 20$, $MN = 32$, and $PR = 3x - 10$, find the value of x.
   A. 10 **B.** 14 **C.** 30 **D.** 42 8. _____

9. Given $\triangle WIN \cong \triangle LUV$ with $m\angle W = 38$, $m\angle V = 102$, and $m\angle I = 7x + 5$, find the value of x.
   A. 5 **B.** 35 **C.** 38 **D.** 40 9. _____

10. If $\triangle ABC \cong \triangle DEF$, what must be true about $\angle C$ and $\angle F$?
    A. $m\angle C + m\angle F = m\angle A$ **B.** $m\angle C > m\angle F$
    C. $m\angle C = m\angle F$ **D.** $m\angle C < m\angle F$ 10. _____

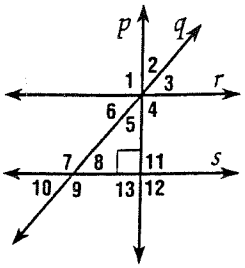
11. Which of the following is not a postulate used to prove the congruence of two triangles?
    A. ASA **B.** SSA **C.** SAS **D.** SSS 11. _____

12. In $\triangle PBL$, what is the included angle for $\overline{BL}$ and $\overline{PL}$?
    A. $\angle P$ **B.** $\angle B$ **C.** $\angle L$ **D.** $\overline{PB}$ 12. _____

13. Identify the property of equality that justifies the statement "If $PQ + BC = AB + BC$, then $PQ = AB$."
    A. substitution **B.** symmetric
    C. transitive **D.** subtraction 13. _____

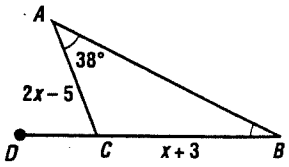
14. The symmetric property of equality states "If $a = b$, then _____."
    A. $a = c$ **B.** $a = a$ **C.** $a = b$ **D.** $b = a$ 14. _____

For questions 1 to 6, refer to the figure at the right.



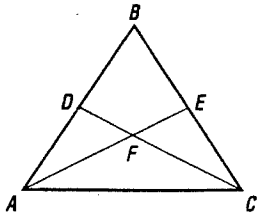
1. Which of the numbered angles appears to be obtuse? 1. _____
2. Are $\angle 2$ and $\angle 6$ vertical angles? 2. _____
3. Are $\angle 7$ and $\angle 8$ supplementary angles? 3. _____
4. If $\angle 6 \cong \angle 8$, which lines are parallel and why? 4. _____
5. If r $\parallel$ s and m$\angle 5 = 27$, find m$\angle 3$. 5. _____
6. If r $\parallel$ s and m $\angle 5 = 15$, find m$\angle 7$. 6. _____

For questions 7 to 10, refer to the figure at the right



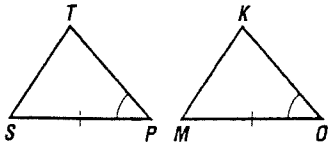
7. Classify $\triangle ABC$. 7. _____
8. Find m$\angle ACD$. 8. _____
9. Find m$\angle ACB$. 9. _____
10. Find BC. 10. _____
11. Can an isosceles triangle be an acute triangle? 11. _____
12. Name the congruence property that justifies the statement "If $\angle A \cong \angle B$, then $\angle B \cong \angle A$." 12. _____
13. The measure of an angle is 18 less than twice its complement. Find the measure of the angle. 13. _____

Refer to the figure to complete each statement. Justify your answers.



14. If $\overline{DC} \cong \overline{AE}$ and $\angle ACD \cong \angle EAC$, then $\triangle$ ___?___ $\cong \triangle$ ___?___ . 14. _____
15. If $\overline{BD} \cong \overline{BE}$ and $\angle BDC \cong \angle BEA$, then $\triangle$ ___?___ $\cong \triangle$ ___?___ . 15. _____
16. If $\angle FAC \cong \angle FCA$ and $\overline{DF} \cong \overline{EF}$, then $\triangle$ ___?___ $\cong \triangle$ ___?___ . 16. _____

17. Name one additional pair of corresponding parts that need to be congruent in order to prove that $\triangle STP \cong \triangle MKO$ by *ASA*.



A. $\angle S \cong \angle M$ **B.** $\overline{TP} \cong \overline{KO}$
C. $\angle T \cong \angle K$ **D.** $\overline{ST} \cong \overline{MK}$

17. _____

1. If $ABCD$ is a parallelogram, then which statement is true?
   A. $\overline{AB} \cong \overline{BC}$ **B.** $\overline{AB} \cong \overline{CD}$
   C. $\overline{AC} \cong \overline{BD}$ **D.** $\overline{BC} \cong \overline{CD}$ 1. _____

2. If $LMNP$ is a parallelogram and $m\angle M = 60$, what is $m\angle N$?
   A. 30 **B.** 60 **C.** 120 **D.** 300 2. _____

3. Which statement is sufficient to prove that quadrilateral $GHIJ$ is a parallelogram?
   A. $m\angle G \cong m\angle I$, $m\angle H \cong m\angle J$ **B.** $\overline{GH} \cong \overline{IJ}$
   C. $\overline{GI} \cong \overline{HJ}$ **D.** $\overline{HI} \parallel \overline{GJ}$ 3. _____

4. Three of the vertices of parallelogram $RSTU$ are $R(-3, 2)$, $S(1, 1)$, and $T(-1, -1)$. Which of the following are possible coordinates of U?
   A. (5, 1) **B.** (5, –2) **C.** (–5, 0) **D.** (–5, –1) 4. _____

5. If $XYZW$ is a rectangle, then which statement must be true?
   A. $\overline{XY} \cong \overline{YZ}$ **B.** $\overline{YZ} \cong \overline{ZW}$
   C. $\overline{XW} \cong \overline{XY}$ **D.** $\overline{XZ} \cong \overline{YW}$ 5. _____

6. If $CDEF$ is a rectangle and $CD = 6$, what is EF?
   A. 12 **B.** 6 **C.** 3 **D.** 2 6. _____

7. Which statement is true?
   A. All squares are rhombi. **B.** All rhombi are squares.
   C. All rectangles are squares. **D.** All squares are congruent 7. _____

8. If $MNOP$ is a square, what is $m\angle MNP$?
   A. 180 **B.** 135 **C.** 90 **D.** 45 8. _____

9. Which statement is false?
   A. All isosceles trapezoids are quadrilaterals.
   B. All isosceles trapezoids have both pairs of base angles congruent.
   C. All isosceles trapezoids are parallelograms.
   D. All isosceles trapezoids have congruent diagonals. 9. _____

10. If $ABCD$ is a trapezoid with bases of 14 m and 8 m, what is the measure of its median?
    A. 7 m **B.** 11 m **C.** 15 m **D.** 22 m 10. _____

11. Find SW if W is between S and T, $SW = 3x - 2$, $WT = 2x$, and $ST = 48$.
    A. 10 **B.** 20 **C.** 52 **D.** 28 11. _____

12. Find the length of the segment with endpoints $M(-1, 1)$ and $N(3, -2)$.
    A. 5 **B.** 9 **C.** 16 **D.** 25 12. _____

13. Find the measure of two complementary angles if the measure of one angle is 24 more than the measure of the other.
    A. 33, 57 **B.** 24, 66 **C.** 33, 147 **D.** 66, 114 13. _____

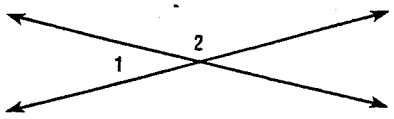
14. If two angles form a linear pair, then they are
    A. vertical angles. **B.** supplementary angles.
    C. complementary angles. **D.** congruent angles. 14. _____

1. If $ABCD$ is a parallelogram, $m\angle D = x$, and $m\angle A = 3x + 4$, find the value of x.
   A. 46 **B.** 45 **C.** 44 **D.** 43 **1.** _____

2. $XYZW$ is a parallelogram with diagonals $\overline{XZ}$ and $\overline{YW}$ that intersect at point A. If $YA = 2t$, $WA = 3t - 4$, and $XZ = 5t$, find XA.
   A. 20 **B.** 10 **C.** 9 **D.** 4 **2.** _____

3. Opposite angles are *not* always congruent in a
   A. trapezoid. **B.** rhombus.
   C. rectangle. **D.** parallelogram. **3.** _____

4. Refer to the figure at the right. If $m\angle 1 = 9x - 7$ and $m\angle 2 = 3x + 7$, find the value of x.
   A. 30 **B.** 15
   C. 128 **D.** 2

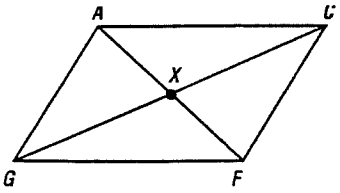


4. _____

5. One way to prove that a quadrilateral is a parallelogram is to show that
   A. it has one pair of parallel sides.
   B. the diagonals are congruent.
   C. it has one pair of congruent sides.
   D. both pairs of opposite angles are congruent. **5.** _____

For questions 6-9, use parallelogram ACFG.

6. If $m\angle GAC = 125$, find $m\angle ACF$.
   A. 125 **B.** 55
   C. 35 **D.** 30



6. _____

7. If $m\angle CFG = 2w + 30$ and $m\angle ACF = w + 15$, find $m\angle AGF$.
   A. 45 **B.** 60
   C. 75 **D.** 120 **7.** _____

8. If $AC = 2x + 2$ and $GF = 4x - 14$, find the value of x.
   A. 8 **B.** 6 **C.** $\frac{8}{3}$ **D.** 2 **8.** _____

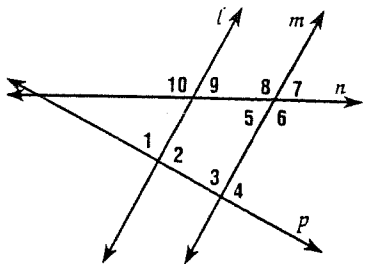
9. If $GX = 2y + 2$ and $XC = 3y - 3$, find the value of y.
   A. 1 **B.** –1 **C.** 5 **D.** –5 **9.** _____

10. All parallelograms have
    A. opposite angles that are supplementary.
    B. diagonals that are congruent.
    C. four congruent sides.
    D. opposite angles that are congruent. **10.** _____

11 If $\triangle JKL \cong \triangle NOM$, then
   A. $\overline{JK} \cong \overline{OM}$ **B.** $\overline{JK} \cong \overline{KL}$ **C.** $\overline{KL} \cong \overline{NM}$ **D.** $\overline{LJ} \cong \overline{MN}$ **11** _____

12 The measure of the vertex angle of an isosceles triangle is 108. Find the measure of a base angle.
   A. 108 **B.** 72 **C.** 36 **D.** 18 **12.** _____

Use the figure on the right for questions13 -16.



13. Identify the special angle pair name for $\angle 10$ and $\angle 6$.
A. alternate interior
B. vertical
C. corresponding
D. alternate exterior

13. _____

14. Given $\ell \parallel m$ and $m\angle 2 = 72$, find $m\angle 3$.
A. 108 **B.** 72
C. 18 **D.** 112

14. _____

15. Given $\ell \parallel m$, $m\angle 9 = 9x + 5$, and $m\angle 5 = x + 37$, find the value of x.
A. 32 **B.** 4
C. 41 **D.** 5

15. _____

16. Given $m\angle 10 = 5x + 2$ and $m\angle 6 = 3x + 28$, find the value of x so that $\ell \parallel m$.
A. 26 **B.** 13 **C.** 62 **D.** 75

16. _____

17. If $DEFG$ is a square, find $m\angle DEF$.
A. 45 **B.** 90 **C.** 30 **D.** 60

17. _____

18. The measures of the bases of a trapezoid are 22 and 28. What is the measure of the median of this trapezoid?
A. 50 **B.** 39 **C.** 36 **D.** 25

18. _____

19. $\overline{MP}$ is a base of isosceles trapezoid $MNOP$. If $m\angle M = 4x + 10$ and $m\angle P = 6x - 14$, find the value of x.
A. 2 **B.** 12 **C.** –2 **D.** –12

19. _____

20. If $QRST$ is an isosceles trapezoid, with $QR = ST$, then $\angle Q$ is congruent to
A. $\angle R$ **B.** $\angle S$ **C.** $\angle T$ **D.** none of these.

20. _____

21 Choose the converse of "If M is the midpoint of $\overline{PQ}$, then $MQ = \frac{1}{2}PQ$."

A. If M is the midpoint of PQ, then $PQ = 2MQ$.

B. If $MQ = \frac{1}{2}PQ$, then M is the midpoint of $\overline{PQ}$.

C. If $PQ = \frac{1}{2}MQ$, then M is the midpoint of $\overline{MQ}$.

D. If P is the midpoint of $\overline{MQ}$, then $PQ = \frac{1}{2}MQ$.

21. _____

22 Identify the conclusion of the statement "If $\angle R$ is acute, then $m\angle R$ is less than 90."
A. $\angle R$ is acute. **B.** $m\angle R$ is less than 90.
C. $\angle R$ is not acute. **D.** none of these

22. _____

23 Identify the if-then form of "All cats like tuna."
A. If an animal likes tuna, it is a cat.
B. If an animal is a cat, it likes tuna.
C. If an animal is not a cat, it does not like tuna.
D. none of these

23. _____

24. Suppose $\overline{AB}$ is one of the top edges of a rectangular box. How many of the bottom edges are skew to $\overline{AB}$?
A. 4 **B.** 3 **C.** 2 **D.** 1

24. _____