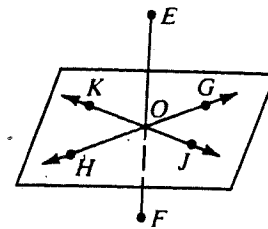


I Indicate the best answer by writing the appropriate letter.

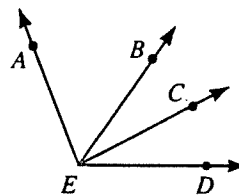
Name _____

- Which of the following sets of points are *not* coplanar?
 - E, H, O, G
 - K, O, G, E
 - E, O, F, J
 - H, K, O, J
- Which of the following sets of points are contained in *more* than one plane?
 - G, O, J
 - E, O, G
 - H, E, G
 - G, O, H
- How many planes contain point E and \overleftrightarrow{JK} ?
 - 0
 - exactly 1
 - unlimited
 - unknown
- If \overleftrightarrow{GH} bisects \overline{EF} , which statement is *not necessarily* true?
 - O is the midpoint of \overline{GH} .
 - $\overline{EO} \cong \overline{OF}$
 - $E, F, G, H,$ and O are coplanar.
 - $GO + OH = GH$
- Points A, B, C are collinear, but they do not necessarily lie on a line in the order named. If $AB = 5$ and $BC = 3$, what is the length of \overline{AC} ?
 - either 2 or 8
 - either 2 or 4
 - 2
 - 8
- On a number line, point R has coordinate -5 and point S has coordinate 3. Point X lies on \overline{SR} and $SX = 5$. Find the coordinate of X .
 - -10
 - -2
 - 8
 - 0



Exs. 1-4

- Which angle appears to be obtuse?
 - $\angle AEB$
 - $\angle DEB$
 - $\angle CEA$
 - $\angle AED$
- If \overleftrightarrow{EC} bisects $\angle DEB$, \overleftrightarrow{EB} bisects $\angle DEA$, and $m\angle BEC = 28$, find the measure of $\angle CEA$.
 - 28
 - 56
 - 84
 - 112
- Which two angles are adjacent angles?
 - $\angle DEB$ and $\angle BEA$
 - $\angle DEB$ and $\angle CEA$
 - $\angle DEC$ and $\angle BEA$
 - $\angle DEA$ and $\angle DEC$



Exs. 7-9

- M is the midpoint of \overline{YZ} . If $YM = r + 3$ and $YZ = 3r - 1$, find MZ .
 - 7
 - 10
 - 20
 - 4
- Which of the following is *not always* true when lines j and k intersect?
 - Exactly one plane contains line j .
 - The lines intersect in exactly one point.
 - All points on j and k are coplanar points.
 - Given any point P on j and any point Q on k , P and Q are collinear points.

II 1. If $m\angle 1 = 60$ and $m\angle 2 = 30$, then $\angle 1$ and $\angle 2$ *cannot* be which of the following?

- acute \sphericalangle
- adjacent \sphericalangle
- vertical \sphericalangle
- complementary \sphericalangle

2. Given: If q , then r . Which of the following is the converse of the given conditional?

- r implies q .
- r if q .
- q only if r .
- r if and only if q .

3. What are basic mathematical assumptions called?

- theorems
- postulates
- conditionals
- conclusions

4. Which of the following *cannot* be used as a reason in a proof?

- a definition
- a postulate
- yesterday's theorem
- tomorrow's theorem

5. $\angle A$ and $\angle B$ are supplements, $m\angle A = 2x - 14$, and $m\angle B = x + 8$.

Find the measure of $\angle B$.

- 62
- 30
- 40
- 70

6. If $\angle 1$ and $\angle 2$ are complements, $\angle 2$ and $\angle 3$ are complements, and $\angle 3$ and $\angle 4$ are supplements, what are $\angle 1$ and $\angle 4$?
- a. supplements b. complements c. congruent angles d. can't be determined

* The statement "If $m\angle A = m\angle B$ and $m\angle D = m\angle A + m\angle C$, then $m\angle D = m\angle B + m\angle C$ " is justified by what property?

a. Transitive b. Substitution c. Symmetric d. Reflexive

8. If $\overline{TQ} \perp \overline{QR}$, which angles *must* be complementary angles?

- a. $\angle 2$ and $\angle 3$ b. $\angle 3$ and $\angle 4$
 c. $\angle 5$ and $\angle 8$ d. $\angle 3$ and $\angle 7$

9. If $m\angle 8 = x + 80$, what is the measure of $\angle 9$?

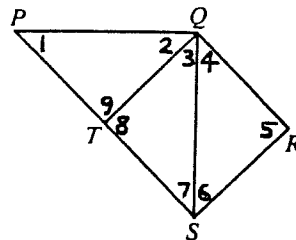
- a. $100 - x$ b. $100 + x$
 c. $x - 80$ d. $x - 180$

10. If $\overline{QT} \perp \overline{PS}$, which statement is *not* always true?

- a. $\angle 8 \cong \angle 9$ b. $\angle 2 \cong \angle 3$
 c. $\angle 8$ is a rt. \angle . d. $\angle 8$ and $\angle 9$ are supp. \angle s.

11. If \overline{SQ} bisects $\angle RST$, which statement *must* be true?

- a. $2 \cdot m\angle 6 = m\angle RST$ b. $\frac{1}{2}m\angle 7 = m\angle RST$
 c. $\angle 4 \cong \angle 6$ d. $\angle RST \cong \angle RQT$



Exs. 8-11

- III. 1. If \overline{BE} bisects $\angle ABC$, what is the measure of $\angle AEB$?

- a. 30 b. 35 c. 40 d. 45

2. If $m\angle ABE = 40$, what is the measure of $\angle DEB$?

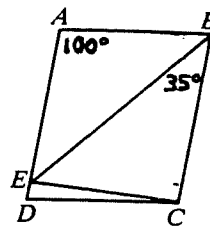
- a. 140 b. 40 c. 75 d. 135

3. If $\overline{AB} \parallel \overline{DC}$, what is the measure of $\angle D$?

- a. 70 b. 80 c. 90 d. 100

4. Which of the following would allow you to conclude that $\overline{AD} \parallel \overline{BC}$?

- a. $\angle DEC \cong \angle BCE$ b. $\angle ABE \cong \angle BEC$
 c. $\angle BEC \cong \angle BCE$ d. $m\angle A + m\angle AEC = 180$



Exs. 1-4

5. What is the measure of each interior angle of a regular octagon?

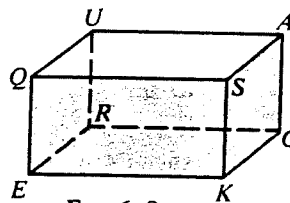
- a. 150 b. 144 c. 140 d. 135

6. The plane containing Q, S, A, U appears to be parallel to the plane containing which points?

- a. Q, E, K, S b. E, K, C, R
 c. R, E, Q, U d. U, R, C, A

* Which of the following appear to be skew lines?

- a. \overrightarrow{QE} and \overrightarrow{AC} b. \overrightarrow{QU} and \overrightarrow{KC}
 c. \overrightarrow{AC} and \overrightarrow{UR} d. \overrightarrow{QS} and \overrightarrow{AC}



Exs. 6-8

8. \overline{EK} does *not* appear to be parallel to the plane containing which points?

- a. U, A, C b. Q, U, A c. Q, U, R d. Q, S, C

9. The sum of the measures of the interior angles of a certain polygon is the same as the sum of the measures of its exterior angles. How many sides does the polygon have?

- a. four b. six c. eight d. ten

10. What is the next number in the sequence 1, 2, 4, 7, 11, ...?

- a. 17 b. 13 c. 16 d. 15

11. \overline{AC} is a diagonal of regular pentagon $ABCDE$. What is the measure of $\angle ACD$?

- a. 36 b. 54 c. 72 d. 108

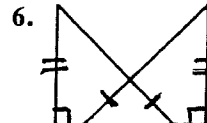
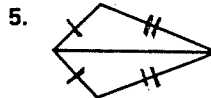
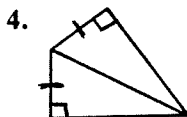
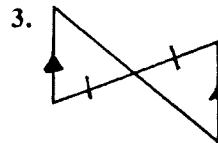
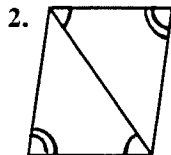
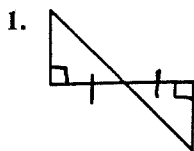
12. A, B, C , and D are coplanar points. $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \perp \overline{AC}$, and $m\angle ACD = 2x + 8$. Find the value of x .

- a. 41 b. 49 c. 90 d. 180

13. \rightarrow \rightarrow \rightarrow \rightarrow \rightarrow \rightarrow \rightarrow

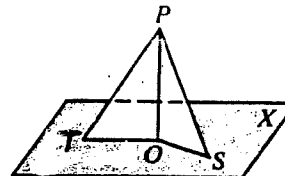
13. What is the *principal* basis for inductive reasoning?
 a. definitions b. previously proved theorems
 c. postulates d. past observations

IV. In Exercises 1–8 write a method (SSS, SAS, ASA, AAS, or HL) that can be used to prove the two triangles congruent.



7. Given: $\overline{PO} \perp$ plane X ; $OT = OS$

8. Given: $\overline{PO} \perp$ plane X ; $PT = PS$



Exs. 7, 8

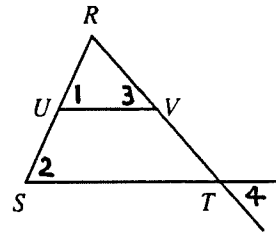
Indicate the best answer by writing the appropriate letter.

9. In $\triangle RXT$, $\angle R \cong \angle T$, $RT = 2x + 5$, $RX = 5x - 7$, and $TX = 2x + 8$. What is the perimeter of $\triangle RXT$?
 a. 5 b. 15 c. 18 d. 51
10. If $\triangle DEF \cong \triangle PRS$, which of these congruences *must* be true?
 a. $\overline{DF} \cong \overline{PS}$ b. $\overline{EF} \cong \overline{PR}$ c. $\angle E \cong \angle S$ d. $\angle F \cong \angle R$
11. In $\triangle ABC$, $AB = AC$, $m\angle A = 46$, and \overline{BD} is an altitude. What is the measure of $\angle CBD$?
 a. 23 b. 44 c. 67 d. 134
12. An equiangular triangle *cannot* be which of the following?
 a. equilateral b. isosceles c. scalene d. acute
13. Point X is equidistant from vertices T and N of scalene $\triangle TEN$. Point X *must* lie on which of the following?
 a. bisector of $\angle E$ b. perpendicular bisector of \overline{TN}
 c. median to \overline{TN} d. the altitude to \overline{TN}

- V.**
1. Both pairs of opposite sides of a quadrilateral are parallel. Which special kind of quadrilateral *must* it be?
 a. parallelogram b. rectangle c. rhombus d. trapezoid
 2. The diagonals of a certain quadrilateral are congruent. Which term could *not* be used to describe the quadrilateral?
 a. isosceles trapezoid b. rectangle
 c. rhombus d. parallelogram with a 60° angle
 3. M is the midpoint of hypotenuse \overline{TK} of right $\triangle TAK$. $AM = 13$. What is the length of \overline{TK} ?
 a. 26 b. $19\frac{1}{2}$ c. 13 d. none of these
 4. In $\square WXYZ$, $WX = 10$. What does ZW equal?
 a. 16 b. YZ c. WY d. none of these
 5. A diagonal of a parallelogram bisects one of its angles. Which special kind of parallelogram *must* it be?
 a. rectangle b. rhombus
 c. square d. parallelogram with a 60° angle
 6. The lengths of the bases of a trapezoid are 18 and 26. What is the length of the median?
 a. 8 b. 22 c. 44 d. 34

7. In quad. $PQRS$, $PQ = SR$, $QR = PS$, and $m\angle P = m\angle Q$. Which of the following is *not necessarily* true?
 a. $\overline{PR} \perp \overline{QS}$ b. $\overline{PR} \cong \overline{QS}$ c. $\angle P \cong \angle R$ d. $\angle R \cong \angle S$
8. In $\triangle ABC$, $AB = 8$, $BC = 10$, and $AC = 12$. M is the midpoint of \overline{AB} , and N is the midpoint of \overline{BC} . What is the length of \overline{MN} ?
 a. 4 b. 5 c. 6 d. 9
9. If $EFGH$ is a parallelogram, which of the following *must* be true?
 a. $\angle E \cong \angle F$ b. $\angle F \cong \angle H$
 c. $\overline{FG} \parallel \overline{GH}$ d. $m\angle E + m\angle G = 180$
10. Which information does *not* prove that quad. $ABCD$ is a parallelogram?
 a. \overline{AC} and \overline{BD} bisect each other. b. $\overline{AD} \parallel \overline{BC}$; $\overline{AD} \cong \overline{BC}$
 c. $\overline{AB} \parallel \overline{CD}$; $\overline{AD} \cong \overline{BC}$ d. $\angle A \cong \angle C$; $\angle B \cong \angle D$

11. In the figure, $\overline{RU} \cong \overline{US}$ and $\angle 1 \cong \angle 2$. Which of the following *cannot* be proved?

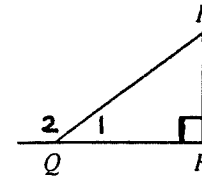


Ex. 11

- a. $\angle 3 \cong \angle 4$ b. $\overline{RV} \cong \overline{VT}$
 c. $\overline{US} \cong \overline{VT}$ d. $ST = 2 \cdot UV$
12. Which of the following *must* be true for any trapezoid?
 a. Any two consecutive angles are supplementary.
 b. At least one angle is obtuse.
 c. The diagonals bisect each other.
 d. The median bisects each base

VI.

1. Which of the following statements *must* be false?
 a. $QR + PR > PQ$ b. $m\angle 2 > m\angle P + m\angle R$
 c. $\frac{1}{2}m\angle 2 > \frac{1}{2}m\angle 1$ d. $PQ > PR$
2. You don't need a figure to do this exercise. Given that $m\angle A = m\angle B$, you want to prove that $m\angle 3 = m\angle 4$. To write an indirect proof, you should begin by temporarily assuming which statement?
 a. $m\angle A \neq m\angle B$ b. $m\angle A = m\angle B$
 c. $m\angle 3 = m\angle 4$ d. $m\angle 3 \neq m\angle 4$



Ex. 1

3. In quadrilateral $MNPQ$, $MN = 5$, $NP = 6$, $PQ = 7$, and $QM = 9$. Which of the following might possibly be the length of \overline{NQ} ?
 a. 12.5 b. 14 c. 2 d. all of these

4. Given: (1) If A is white, then B is red.
 (2) B is not red.
 Which of the following *must* be true?
 a. B is white. b. B is not white. c. A is not white. d. A is red.

5. If a conditional is known to be true, then which of the following *must* also be true?
 a. its converse b. its contrapositive
 c. its inverse d. none of these

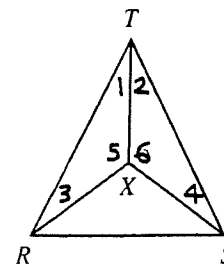
6. In $\triangle DEF$, $m\angle D = 50$, and an exterior angle with vertex F has measure 120. What is the longest side of $\triangle DEF$?
 a. \overline{DE} b. \overline{EF} c. \overline{DF} d. unknown

7. In $\triangle MNP$, $MN = 8$ and $NP = 10$. Which of these *must* be true?
 a. $MP > 2$ b. $MP < 2$ c. $MP > 10$ d. $MP < 10$

8. What is the inverse of "If $x = 3$, then $x > 0$ "?
 a. If $x > 0$, then $x = 3$. b. If $x \neq 3$, then $x \leq 0$.
 c. If $x \leq 0$, then $x \neq 3$. d. If $x = 3$, then $x \leq 0$.

9. If $RT = ST$ and $RX > SX$, what can you conclude?
 a. $m\angle 1 > m\angle 2$ b. $m\angle XRS > m\angle XSR$
 c. $m\angle 3 = m\angle 4$ d. $m\angle 5 > m\angle 6$

10. If $RX = SX$ and $m\angle 5 > m\angle 6$, what can you conclude?
 a. $m\angle TRS < m\angle TSR$ b. $RT < ST$
 c. $m\angle 1 > m\angle 2$ d. $m\angle 3 > m\angle 4$



Ex. # 9, 10

Geometry
Review for Midterm
Multiple Choice
Answer Key

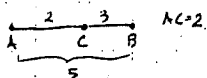
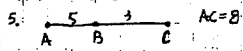
Chapter I

1. B

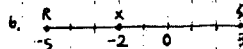
2. D

3. B

4. A

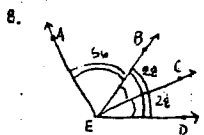


A



B

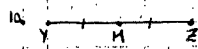
7. D



$$2z + 5z = 84$$

C

9. A



$$MZ + YM = YZ$$

$$r + 3 + r + 3 = 3r - 1$$

$$2r + 6 = 3r - 1$$

$$6 = r - 1$$

$$7 = r$$

$$MZ = 7 + 3$$

$$= 10$$

B

11. A

Chapter II

1. C

Converse: If \angle , then q

A

B

D

5. $m\angle A + m\angle B = 180$

$$2x - 14 + x + 8 = 180$$

$$3x - 6 = 180$$

$$3x = 186$$

$$x = 62$$

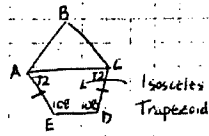
$$m\angle B = x + 8$$

$$= 62 + 8$$

$$= 70$$

D

11.



$$\text{measure int. } \angle = \frac{(n-2)180}{n}$$

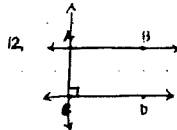
$$= \frac{(5-2)180}{5}$$

$$= 108$$

$$360 - 108 - 108 = 144$$

$$\frac{144}{2} = 72$$

C



$$m\angle ACD = 90$$

$$2x + 8 = 90$$

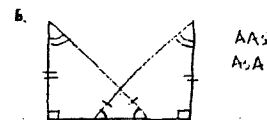
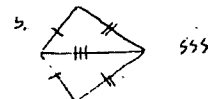
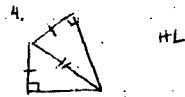
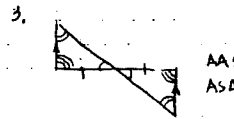
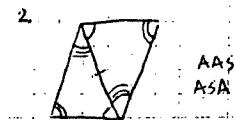
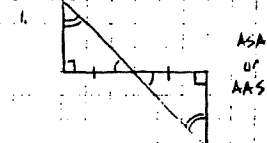
$$2x = 82$$

$$x = 41$$

A

3. D

Chapter 4. (II)



- b. $m\angle 1 = 20$
- $m\angle 2 = 70$
- $m\angle 3 = 20$
- $m\angle 4 = 160$
- $m\angle 1 + m\angle 4 = 180$

A

~~B~~

B. $m\angle 3 + m\angle 4 = 90$

9. $m\angle B + m\angle 9 = 180$

$$x + 20 + m\angle 9 = 180$$

$$x + m\angle 9 = 160$$

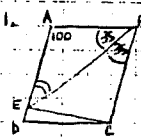
$$m\angle 9 = 160 - x$$

A

10. B

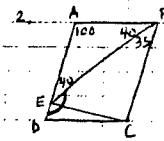
11. A

Chapter III



$$m\angle AEB = 180 - 100 - 35 = 45$$

D



$$m\angle DEB = 180 - 40 = 140$$

A

3. Same-side interior angles
 $180 - 100 = 80$

B

4. A. alternate interior angles are congruent

5. measure int. $\angle = \frac{(n-2)180}{n}$; $n = \# \text{ sides}$

$$= \frac{(5-2)180}{5}$$

$$= 108$$

D

6. B. top and bottom

~~D~~

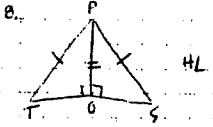
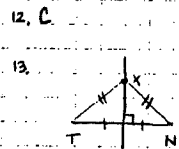
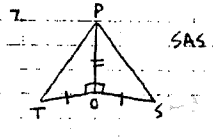
B. C

9. Quadrilateral sum int. $\angle = 360$
sum ext. $\angle = 360$

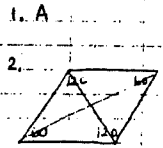
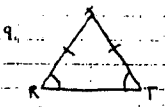
A

10. $\frac{1}{1}, \frac{2}{2}, \frac{4}{3}, \frac{7}{4}, \frac{11}{5}, \frac{16}{6}$

C



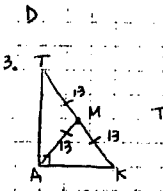
Chapter V



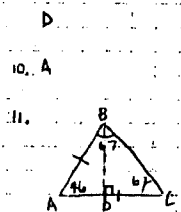
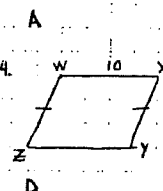
$RX = TX$
 $5x - 7 = 2x + 8$
 $3x - 7 = 8$
 $3x = 15$
 $x = 5$

$RT = 2(5) + 5 = 15$
 $RX = 5(5) - 7 = 18$
 $TX = 2(5) + 8 = 18$

Perimeter = $15 + 18 + 18 = 51$

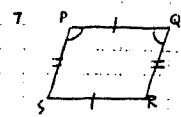
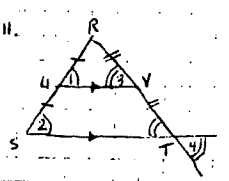
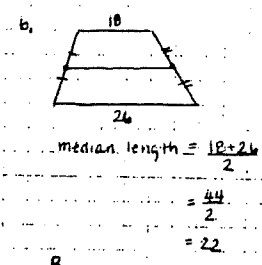
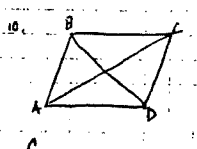
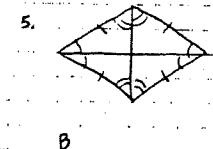


$TK = 13 + 13 = 26$

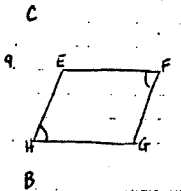
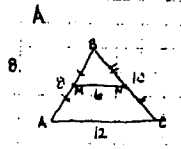


$\frac{180 - 46}{2} = 67$

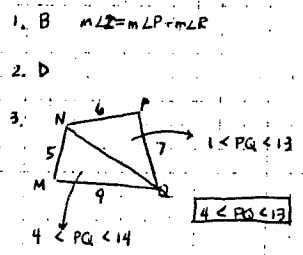
$m\angle C = 180 - 90 - 67 = 23$



Rectangle 14

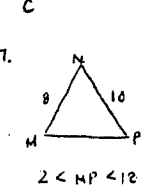
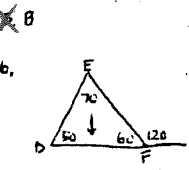


Chapter VI



~~B~~
 9. A \triangletriangle Inequality
 10. $RT > ST$. SAS Inequality
 \Rightarrow Entire \triangle : $m\angle TRS < m\angle TSR$
 A

4. C Contrapositive is logically equivalent to conditional



$2 < MP < 12$