

Final Exam- Review Fall Semester



Multiple Choice

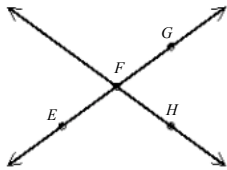
Identify the choice that best completes the statement or answers the question.

- Based on the pattern, what are the next two terms of the sequence?
4, 12, 20, 28, ...
a. 36, 44
b. 224, 1792
c. 44, 52
d. 36, 1792

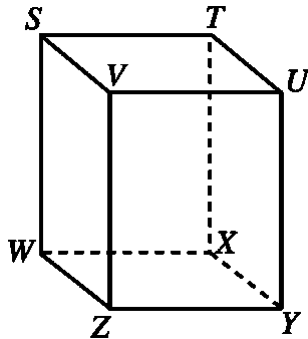
- Based on the pattern, what is the next figure in the sequence?





- 
 - 
- Are E , F , and H collinear? If so, name the line on which they lie.



- Yes, they lie on the line EG .
 - No, the three points are not collinear.
 - Yes, they lie on the line EH .
 - Yes, they lie on the line FH .
- What is the intersection of plane $XWST$ and plane $ZWSV$?

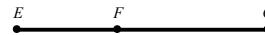


- \overleftrightarrow{ST}
- \overleftrightarrow{VZ}
- \overleftrightarrow{TX}
- \overleftrightarrow{SW}

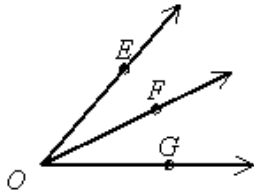
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- Find a counterexample to show that the conjecture is false.
Conjecture: The product of two positive numbers is greater than the sum of the two numbers.
a. 3 and 5
b. 2 and 2
c. A counterexample exists, but it is not shown above.
d. There is no counterexample. The conjecture is true.

- If $EF = 3x - 14$, $FG = 4x - 15$, and $EG = 20$, find the values of x , EF , and FG . The drawing is not to scale.



- $x = 1, EF = -11, FG = -11$
 - $x = 1, EF = 7, FG = 13$
 - $x = 7, EF = 35, FG = 43$
 - $x = 7, EF = 7, FG = 13$
- If $m\angle EOF = 37$ and $m\angle FOG = 33$, then what is the measure of $\angle EOG$? The diagram is not to scale.

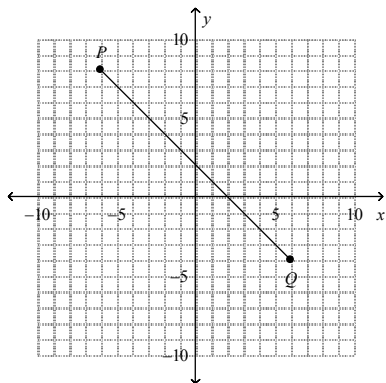


- a. 4
- b. 74
- c. 70
- d. 66

8. $\angle 1$ and $\angle 2$ are supplementary angles. $m\angle 1 = x - 36$, and $m\angle 2 = x + 60$. Find the measure of each angle.
- a. $\angle 1 = 78$, $\angle 2 = 102$
 - b. $\angle 1 = 78$, $\angle 2 = 112$
 - c. $\angle 1 = 42$, $\angle 2 = 148$
 - d. $\angle 1 = 42$, $\angle 2 = 138$

9. Find the distance between points $P(3, 6)$ and $Q(2, 1)$ to the nearest tenth.
- a. 5.1
 - b. 26
 - c. 8.6
 - d. 6

10. Find the midpoint of \overline{PQ} .



- a. $(-1, 2)$
15. What is the conclusion of the following conditional?

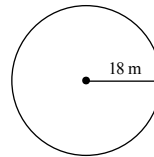
A number is divisible by 5 if the number ends with digits 0 or 5.

- a. If a number ends with the digit 0 or 5, then the number is divisible by 5.

- b. $(0, 3)$
- c. $(-1, 3)$
- d. $(0, 2)$

11. $M(6, 3)$ is the midpoint of \overline{RS} . The coordinates of S are $(10, 5)$. What are the coordinates of R ?
- a. $(14, 7)$
 - b. $(2, 1)$
 - c. $(12, 6)$
 - d. $(8, 4)$

12. Find the circumference of the circle to the nearest tenth. Use 3.14 for π .



- a. 226.1 m
- b. 1017.4 m
- c. 113 m
- d. 56.5 m

13. If the perimeter of a square is 108 inches, what is its area?
- a. 27 in.^2
 - b. $11,664 \text{ in.}^2$
 - c. 729 in.^2
 - d. 108 in.^2

14. Another name for an *if-then* statement is a _____. Every conditional has two parts. The part following *if* is the _____ and the part following *then* is the _____.

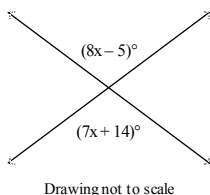
- a. conditional; conclusion; hypothesis
- b. hypothesis; conclusion; conditional
- c. conditional; hypothesis; conclusion
- d. hypothesis; conditional; conclusion

- b. The number ends with digits 0 or 5.
 - c. The number is divisible by 5.
 - d. The number is odd.
16. Write the two conditional statements that make up the following biconditional.
I drink juice if and only if it is breakfast time.
- a. I drink juice if and only if it is breakfast time.
It is breakfast time if and only if I drink juice.
 - b. If I drink juice, then it is breakfast time.
If it is breakfast time, then I drink juice.
 - c. If I drink juice, then it is breakfast time.
I drink juice only if it is breakfast time.
 - d. I drink juice.
It is breakfast time.

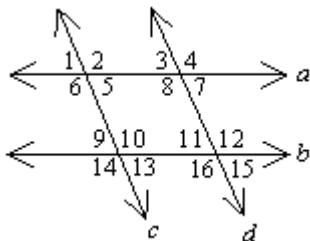
Use the given property to complete the statement.

18. Transitive Property of Congruence
If $\overline{YZ} \cong \overline{WX}$ and $\overline{WX} \cong \overline{UV}$, then _____.
- a. $\overline{WX} \cong \overline{UV}$
 - b. $\overline{WX} \cong \overline{WX}$
 - c. $\overline{YZ} \cong \overline{UV}$
 - d. $\overline{YZ} \cong \overline{WX}$

19. Find the value of x .



- a. 19
 - b. 33
 - c. -19
 - d. 147
20. Which angles are corresponding angles?



- a. $\angle 6$ and $\angle 14$

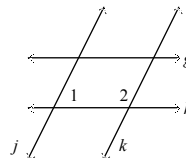
17. Which statement provides a counterexample to the following faulty definition?

A square is a figure with four congruent sides.

- a. A six-sided figure can have four sides congruent.
- b. Some triangles have all sides congruent.
- c. A square has four congruent angles.
- d. A rectangle has four sides.

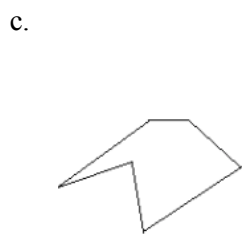
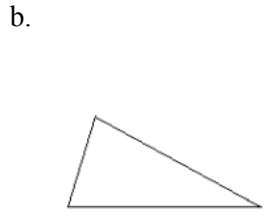
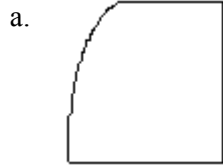
- b. $\angle 5$ and $\angle 6$
- c. $\angle 2$ and $\angle 6$
- d. none of these

21. Complete the statement. If a transversal intersects two parallel lines, then _____ angles are supplementary.
- a. acute
 - b. alternate interior
 - c. same-side interior
 - d. corresponding
22. Which lines, if any, can you conclude are parallel given that $m\angle 1 + m\angle 2 = 180$? Justify your conclusion with a theorem or postulate.

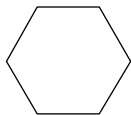


- a. $j \parallel k$, by the Converse of the Same-Side Interior Angles Theorem
- b. $j \parallel k$, by the Converse of the Alternate Interior Angles Theorem
- c. $g \parallel h$, by the Converse of the Alternate Interior Angles Theorem
- d. $g \parallel h$, by the Converse of the Same-Side Interior Angles Theorem

23. Which figure is a convex polygon?



24. Classify the polygon by its sides.



- a. octagon
- b. hexagon
- c. triangle
- d. pentagon

30. Is the line through points $P(3, 1)$ and $Q(-4, -9)$ parallel to the line through points $R(0, 5)$ and $S(-5, -3)$? Explain.
- a. Yes; the lines have equal slopes.
 - b. No, one line has slope, the other has no slope.
 - c. Yes; the lines are both vertical.
 - d. No, the lines have unequal slopes.

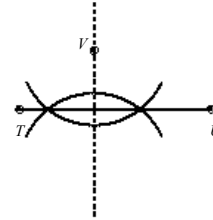
31. Which two lines are parallel?
- I. $5y = -4x - 5$
 - II. $5y = -1 + 2x$
 - III. $5y + 4x = -1$

25. How many sides does a regular polygon have if each exterior angle measures 24° ?
- a. 15 sides
 - b. 17 sides
 - c. 18 sides
 - d. 14 sides
26. The Polygon Angle-Sum Theorem states: The sum of the measures of the angles of an n -gon is ____.
- a. $\frac{n - 2}{180}$
 - b. $(n - 1)180$
 - c. $\frac{180}{n - 1}$
 - d. $(n - 2)180$
27. Complete this statement. The sum of the measures of the exterior angles of an n -gon, one at each vertex, is ____.
- a. $(n - 2)180$
 - b. 360
 - c. $\frac{(n - 2)180}{n}$
 - d. $180n$
28. Complete this statement. A polygon whose sides all have the same length is said to be ____.
- a. regular
 - b. equilateral
 - c. equiangular
 - d. convex
29. Write an equation in point-slope form of the line through point $J(-1, 1)$ with slope -3 .
- a. $y - 1 = -3(x + 1)$
 - b. $y - 1 = 3(x + 1)$
 - c. $y + 1 = -3(x - 1)$
 - d. $y - 1 = -3(x - 1)$

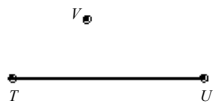
- a. I and III
- b. I and II

- c. II and III
- d. No two of the lines are parallel.

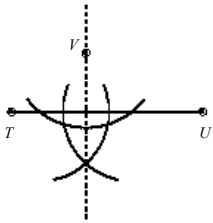
32. What must be true about the slopes of two perpendicular lines, neither of which is vertical?
- a. The slopes are equal.
 - b. The slopes have product 1.
 - c. The slopes have product -1 .
 - d. One of the slopes must be 0.



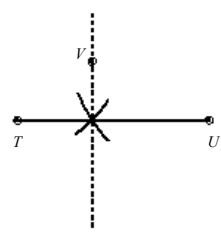
33. Construct the line that is perpendicular to the given line through the given point.



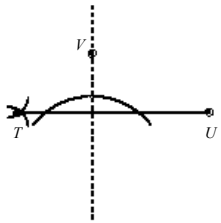
a.



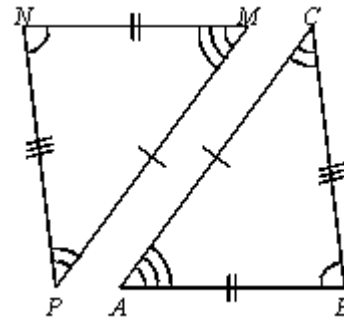
b.



c.



34. $\angle BAC \cong \underline{\hspace{1cm}} ?$

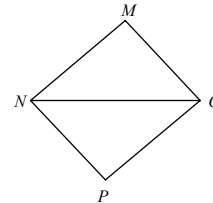


- a. $\angle NPM$
- b. $\angle MNP$
- c. $\angle NMP$
- d. $\angle PNM$

35. Justify the last two steps of the proof.

Given: $\overline{MN} \cong \overline{PO}$ and $\overline{MO} \cong \overline{PN}$

Prove: $\triangle MNO \cong \triangle PON$



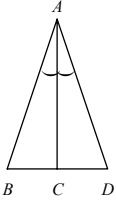
Proof:

- | | |
|--|---------------------------------|
| 1. $\overline{MN} \cong \overline{PO}$ | 1. Given |
| 2. $\overline{MO} \cong \overline{PN}$ | 2. Given |
| 3. $\overline{NO} \cong \overline{ON}$ | 3. $\underline{\hspace{1cm}} ?$ |
| 4. $\triangle MNO \cong \triangle PON$ | 4. $\underline{\hspace{1cm}} ?$ |

- a. Reflexive Property of \cong ; SAS
- b. Symmetric Property of \cong ; SSS
- c. Symmetric Property of \cong ; SAS

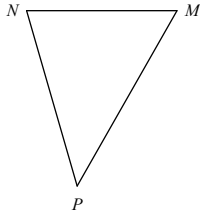
d. Reflexive Property of \cong ; SSS

36. What other information do you need in order to prove the triangles congruent using the SAS Congruence Postulate?



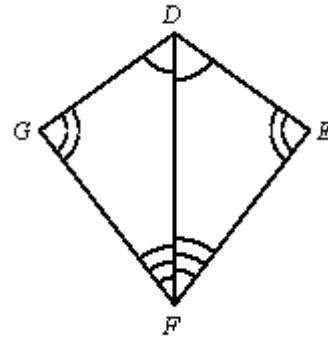
- $\angle BAC \cong \angle DAC$
- $\angle CBA \cong \angle CDA$
- $\overline{AB} \perp \overline{AD}$
- $\overline{AB} \cong \overline{AD}$

37. Name the angle included by the sides \overline{MP} and \overline{PN} .



- $\angle P$
- $\angle M$
- $\angle N$
- none of these

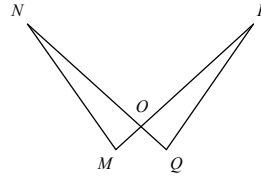
38. From the information in the diagram, can you prove $\triangle FDG \cong \triangle FDE$? Explain.



- yes, by ASA
- yes, by AAA
- yes, by SAS
- no

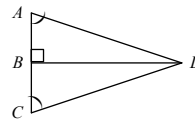
39. Based on the given information, what can you conclude, and why?

Given: $\angle M \cong \angle Q$, $\overline{MO} \cong \overline{OQ}$



- $\triangle MNO \cong \triangle OQP$ by ASA
- $\triangle MNO \cong \triangle QPO$ by SAS
- $\triangle MNO \cong \triangle QPO$ by ASA
- $\triangle MNO \cong \triangle OQP$ by SAS

40. Name the theorem or postulate that lets you immediately conclude $\triangle ABD \cong \triangle CBD$.



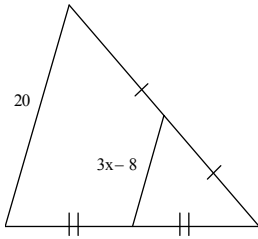
- AAS
- SAS
- ASA
- none of these

41. Supply the missing reasons to complete the proof.

Given: $\angle H \cong \angle K$ and $\overline{HJ} \cong \overline{KJ}$

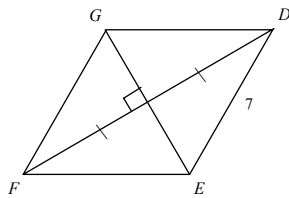
Prove: $\overline{IJ} \cong \overline{LJ}$

46. Find the value of x .



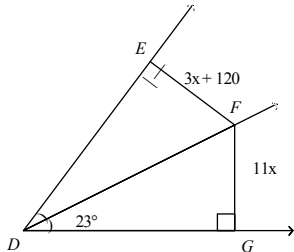
- a. 8
- b. 6
- c. $9\sqrt{3}$
- d. 10

47. The length of \overline{DE} is shown. What other length can you determine for this diagram?



- a. $EF = 7$
- b. $DG = 7$
- c. $DF = 14$
- d. No other length can be determined.

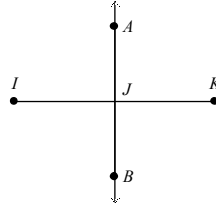
48. \overline{DF} bisects $\angle EDG$. Find the value of x . The diagram is not to scale.



- a. 165
- b. 15
- c. $\frac{7}{60}$
- d. 23

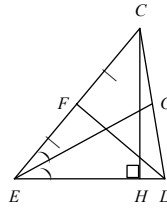
49. Which statement can you conclude is true from the given information?

Given: \overleftrightarrow{AB} is the perpendicular bisector of \overline{IK} .



- a. $\angle IAJ$ is a right angle.
- b. $IJ = JK$
- c. A is the midpoint of \overline{IK} .
- d. $AJ = BJ$

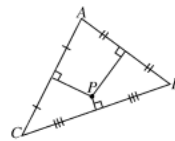
50. Name a median for $\triangle CDE$.



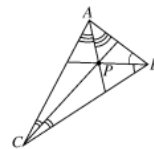
- a. \overline{CF}
- b. \overline{CH}
- c. \overline{DF}
- d. \overline{EG}

51. Which diagram shows a point P an equal distance from points A , B , and C ?

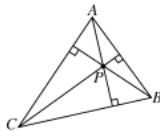
a.



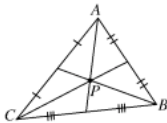
b.



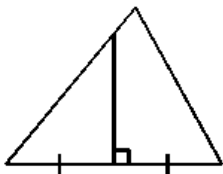
c.



d.

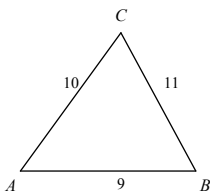


52. What is the name of the segment inside the large triangle?



- a. altitude
- b. perpendicular bisector
- c. median
- d. midsegment

53. Name the smallest angle of $\triangle ABC$. The diagram is not to scale.



- a. $\angle C$
- b. $\angle B$
- c. $\angle A$
- d. Two angles are the same size and smaller than the third.

54. Which three lengths can NOT be the lengths of the sides of a triangle?

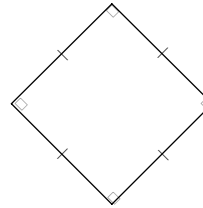
- a. 21 m, 7 m, 9 m
- b. 15 m, 12 m, 15 m
- c. 25 m, 16 m, 12 m

d. 7 m, 9 m, 5 m

55. Two sides of a triangle have lengths 5 and 13. What must be true about the length of the third side, x ?

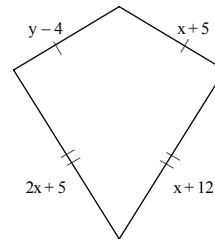
- a. $8 < x < 13$
- b. $8 < x < 5$
- c. $8 < x < 18$
- d. $5 < x < 13$

56. Judging by appearance, classify the figure in as many ways as possible.



- a. rectangle, square, quadrilateral, parallelogram, rhombus
- b. rectangle, square, parallelogram
- c. rhombus, trapezoid, quadrilateral, square
- d. square, rectangle, quadrilateral

57. Find the values of the variables and the lengths of the sides of this kite.

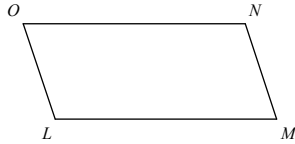


- a. $x = 16, y = 7; 3, 21$
- b. $x = 7, y = 16; 3, 21$
- c. $x = 16, y = 7; 12, 12$
- d. $x = 7, y = 16; 12, 19$

58. Which statement is true?

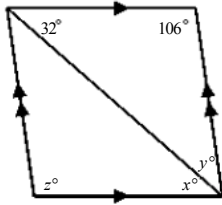
- a. All parallelograms are quadrilaterals.
- b. All quadrilaterals are parallelograms.
- c. All rectangles are squares.
- d. All parallelograms are rectangles.

59. $LMNO$ is a parallelogram. If $NM = x + 31$ and $OL = 5x + 7$ find the value of x and then find NM and OL .



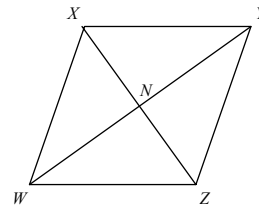
- a. $x = 8, NM = 37, OL = 39$
- b. $x = 8, NM = 39, OL = 39$
- c. $x = 6, NM = 37, OL = 37$
- d. $x = 6, NM = 39, OL = 37$

60. Find the values of the variables in the parallelogram. The diagram is not to scale.



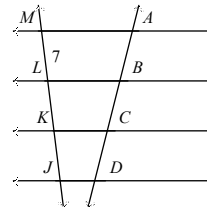
- a. $x = 42, y = 32, z = 106$
- b. $x = 32, y = 42, z = 106$
- c. $x = 32, y = 42, z = 138$
- d. $x = 42, y = 42, z = 138$

61. $WXYZ$ is a parallelogram. Name an angle congruent to $\angle XWZ$.



- a. $\angle XYW$
- b. $\angle WYZ$
- c. $\angle WXY$
- d. $\angle XYZ$

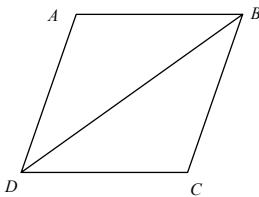
62. In the figure, the horizontal lines are parallel and $AB = BC = CD$. Find JM . The diagram is not to scale.



- a. 14
- b. 21
- c. 7
- d. 28

63. What is the missing reason in the proof?

Given: parallelogram $ABCD$ with diagonal \overline{BD}
Prove: $\triangle ABD \cong \triangle CDB$



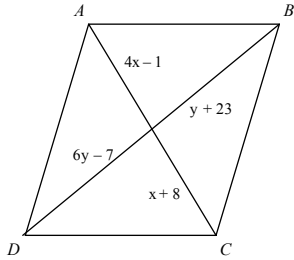
Statements	Reasons
1. $\overline{AD} \parallel \overline{BC}$	1. Definition of parallelogram
2. $\angle ADB \cong \angle CBD$	2. Alternate Interior Angles Theorem
3. $\overline{AB} \parallel \overline{CD}$	3. Definition of parallelogram
4. $\angle ABD \cong \angle CDB$	4. Alternate Interior Angles Theorem
5. $\overline{DB} \cong \overline{DB}$	5. ?

6. $\triangle ABD \cong \triangle CDB$

| 6. ASA

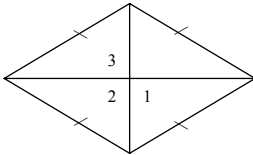
- a. ASA
- b. Reflexive Property of Congruence
- c. Alternate Interior Angles Theorem
- d. Definition of parallelogram

64. Find values of x and y for which $ABCD$ must be a parallelogram. The diagram is not to scale.



- a. $x = 6, y = 3$
- b. $x = 3, y = 6$
- c. $x = 3, y = 11$
- d. $x = 3, y = 29$

65. In the rhombus, $m\angle 1 = 6x$, $m\angle 2 = x + y$, and $m\angle 3 = 18z$. Find the value of each variable. The diagram is not to scale.

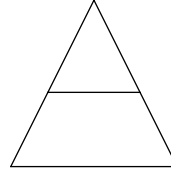


- a. $x = 30, y = 75, z = 10$
- b. $x = 15, y = 165, z = 10$
- c. $x = 30, y = 165, z = 5$
- d. $x = 15, y = 75, z = 5$

66. $DEFG$ is a rectangle. $DF = 6x - 2$ and $EG = x + 38$. Find the value of x and the length of each diagonal.

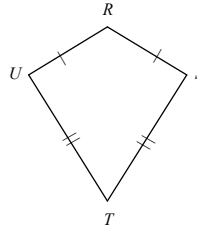
- a. $x = 4, DF = 42, EG = 42$
- b. $x = 8, DF = 42, EG = 42$
- c. $x = 8, DF = 46, EG = 46$
- d. $x = 8, DF = 46, EG = 49$

67. The isosceles trapezoid is part of an isosceles triangle with a 52° vertex angle. What is the measure of an acute base angle of the trapezoid? Of an obtuse base angle? The diagram is not to scale.



- a. $64^\circ; 116^\circ$
- b. $52^\circ; 116^\circ$
- c. $52^\circ; 128^\circ$
- d. $64^\circ; 128^\circ$

68. $m\angle R = 150$ and $m\angle S = 100$. Find $m\angle T$. The diagram is not to scale.



- a. 5
- b. 10
- c. 75
- d. 100