

2nd Semester Final Exam Review

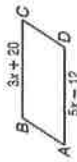
Multiple Choice

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

CHAPTER 6

- Find the sum of the measures of the interior angles of a convex 30-gon.
 - 5400
 - 5040
 - 360
 - 168
- Find the sum of the measures of the exterior angles of a convex 21-gon.
 - 21
 - 180
 - 360
 - 3420
- If the measure of each interior angle of a regular polygon is 108, find the measure of each exterior angle.
 - 18
 - 72
 - 90
 - 108

- For parallelogram $ABCD$, find x .



- 4
- 16
- 10.25
- 21.5

- Which of the following is a property of a parallelogram?
 - The diagonals are congruent.
 - The diagonals bisect the angles.
 - The diagonals are perpendicular.
 - The diagonals bisect each other.

- Find x and y so that $ABCD$ will be a parallelogram.



- $x = 6, y = 42$
- $x = 6, y = 22$
- $x = 20, y = 42$
- $x = 20, y = 22$

- Find x so that this quadrilateral is a parallelogram.



- 44
- 46
- 90
- 134

- Parallelogram $ABCD$ has vertices $A(0, 0)$, $B(2, 4)$, and $C(10, 4)$. Find the possible coordinates of D .

- $(8, 0)$
- $(10, 8)$
- $(0, 4)$
- $(10, 8)$

- Which of the following is a property of all rectangles?
 - four congruent sides
 - diagonals bisect the angles
 - diagonals are perpendicular
 - four right angles

- $ABCD$ is a rectangle with diagonals AC and BD . If $AC = 2x + 10$ and $BD = 56$, find x .
 - 23
 - 78
 - 33
 - 122

- $ABCD$ is a rectangle with $B(-5, 0)$, $C(7, 0)$ and $D(7, 3)$. Find the coordinates of A .
 - $(-5, 7)$
 - $(3, 5)$
 - $(-5, 3)$
 - $(7, -3)$

- For rhombus $ABCD$, find $m\angle 1$.



- 45
- 60
- 90
- 120

- Find $m\angle PRS$ in square $PQRS$.



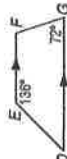
- 30
- 45
- 60
- 90

- Choose a pair of base angles of trapezoid $ABCD$.



- $\angle A, \angle C$
- $\angle B, \angle D$
- $\angle A, \angle D$
- $\angle D, \angle C$

- In trapezoid $DEFG$, find $m\angle D$.

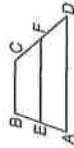


- 44
- 72
- 108
- 136

- The hood of Olivia's car is the shape of a trapezoid. The base bordering the windshield measures 30 inches and the base at the front of the car measures 24 inches. What is the width of the median of the hood?
 - 25 in.
 - 28 in.
 - 27 in.
 - 29 in.

17. The length of one base of a trapezoid is 44, the median is 36, and the other base is $2x + 10$. Find x .
- A. 9
B. 17
C. 21
D. 40

18. Given trapezoid $ABCD$ with median EF , which of the following is true?



- F. $EF = \frac{1}{2}AD$
G. $AE = FD$
H. $AB = EF$
J. $EF = \frac{BC + AD}{2}$
19. $ABCD$ is a rectangle with $A(0, 0)$, $B(b, 0)$, and $D(0, a)$. Find the coordinates of C .
- A. $C(a, b)$
B. $C(b, a)$
C. $C(2b, a)$
D. $C(a + b, a)$

20. To prove that the diagonals of a square bisect each other, you would position and label a square in the coordinate plane and then find which of the following?

- F. measures of the angles
G. midpoints of the diagonals
H. lengths of the diagonals
J. slopes of the diagonals

CHAPTER 7

21. There are 15 plums and 9 apples in a fruit bowl. What is the ratio of apples to plums?
- A. 3:5
B. 3:8
C. 5:3
D. 8:3

22. The scale drawing of a porch is 8 inches wide by 12 inches long. If the actual porch is 12 feet wide, what is the length of the porch?

- F. 8 ft
G. 10 ft
H. 16 ft
J. 18 ft

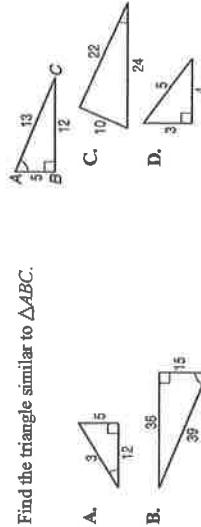
23. Solve $\frac{5}{6} = \frac{4}{x}$.

- A. 4.6
B. 4.8
C. 5
D. 7

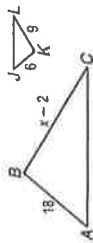
24. A quality control technician checked a sample of 30 bulbs. Two of the bulbs were defective. If the sample was representative, find the number of bulbs expected to be defective in a case of 450.

- F. 24
G. 30
H. 36
J. 45

25. Find the triangle similar to $\triangle ABC$.



26. Find x if $\triangle ABC \sim \triangle KLM$.

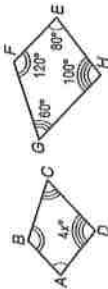


- F. 10
G. 14
H. 25
J. 29

27. Quadrilateral $ABCD \sim$ quadrilateral $PQRS$. If $AB = 10$, $BC = 6$, $PS = 12$, and $QR = 4$, find the scale factor of $ABCD$ to $PQRS$.

- A. $\frac{1}{2}$
B. $\frac{3}{2}$
C. $\frac{5}{3}$
D. $\frac{5}{6}$

28. Quadrilateral $ABCD \sim$ quadrilateral $EFGH$. Find x .



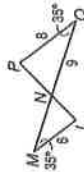
- F. 15
G. 20
H. 25
J. 30

29. Which theorem or postulate can be used to prove that these two triangles are similar?



- A. AA
B. SAS
C. SSA
D. SSS

30. Find MN .



- F. $5\frac{1}{3}$
G. $6\frac{3}{4}$
H. 7
J. 12

31. A 5-foot tall student cast a 4-foot shadow. If the tree next to her cast a 44-foot shadow, what is the height of the tree?

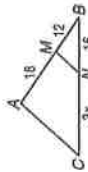
- A. $35\frac{1}{5}$ ft
B. 45 ft
C. $51\frac{1}{2}$ ft
D. 55 ft

32. In $\triangle ABC$, $DE \parallel AC$. If $AD = 12$, $BD = 3$, and $CE = 10$, find BE .



- F. 1
G. $1\frac{1}{2}$
H. 2
J. $2\frac{1}{2}$

33. In $\triangle ABC$, $AC \parallel MN$. What is x ?



- A. 8
B. 10
C. 25
D. 29

34. Find x .



- F. 14
G. 15
H. 16
J. 18

35. $\triangle FGH \sim \triangle PQR$, $FG = 6$, $PQ = 10$, and the perimeter of $\triangle PQR$ is 35. What is the perimeter of $\triangle FGH$?

- A. 21
B. 27
C. 31
D. $58\frac{1}{3}$

36. $\triangle LMN \sim \triangle XYZ$ with altitudes KL and WY . Find KL .



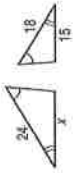
- F. 6
G. 7
H. 9
J. 19

37. Find x .



- A. 5
B. 6
C. $6\frac{1}{2}$
D. $7\frac{1}{2}$

38. Find x .



- F. 16
G. 18
H. 20
J. 21

39. Nathan is building a model of his father's sailboat with a scale factor of $\frac{1}{32}$. The actual sail is in the shape of a right triangle with a base of 8 meters and a hypotenuse of 13 meters. What will be the approximate perimeter of the sail on the model boat?

- A. 32 cm
B. 48.81 cm
C. 65.62 cm
D. 97.65 cm

CHAPTER 8

40. Find the geometric mean between 20 and 5.

- F. 100
G. 50
H. 12.5
J. 10

41. Find x in $\triangle ABC$.



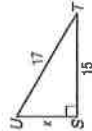
- A. 8
B. 10
C. $\sqrt{20}$
D. 64

42. Find x in $\triangle PQR$.



- F. 13
G. 15
H. 16
J. $\sqrt{60}$

43. Find x in $\triangle STU$.



- A. 2
B. 8
C. $\sqrt{32}$
D. $\sqrt{514}$

44. Which set of measures could represent the sides of a right triangle?

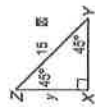
- F. 2, 3, 4
 G. 7, 11, 14
 H. 8, 10, 12
 J. 9, 12, 15

45. Find x in $\triangle DEF$.



- A. 6
 B. $6\sqrt{2}$
 C. $6\sqrt{3}$
 D. 12

46. Find y in $\triangle XYZ$.

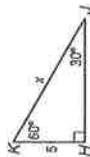


- F. $7.5\sqrt{3}$
 G. $15\sqrt{3}$
 H. 15
 J. 30

47. The length of the sides of a square is 10 meters. Find the length of the diagonal of the square.

- A. 10 m
 B. $10\sqrt{2}$ m
 C. $10\sqrt{3}$ m
 D. 20 m

48. Find x in $\triangle HJK$.



- F. $5\sqrt{2}$
 G. $5\sqrt{3}$

- H. 10
 J. 15

49. Find x in $\triangle ABC$.



- A. 25.
 B. $25\sqrt{2}$
 C. $25\sqrt{3}$
 D. 100

50. In $\triangle QRS$, $\angle R$ is a right angle. Which is the ratio for the tangent of $\angle S$?

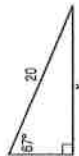
- F. $\frac{\text{measure of leg adjacent to } \angle S}{\text{measure of hypotenuse}}$
 G. $\frac{\text{measure of hypotenuse}}{\text{measure of leg opposite } \angle S}$
 H. $\frac{\text{measure of leg opposite } \angle S}{\text{measure of hypotenuse}}$
 J. $\frac{\text{measure of leg opposite } \angle S}{\text{measure of leg adjacent to } \angle S}$

51. Find $\cos A$ in $\triangle ABC$.



- A. $\frac{7}{24}$
 B. $\frac{7}{25}$
 C. $\frac{25}{24}$
 D. $\frac{24}{25}$

52. Find x to the nearest tenth.

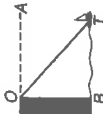


- F. 7.3.
 G. 17.3.
 H. 18.4
 J. 47.1

53. Find the angle of elevation of the sun when a pole 25 feet tall casts a shadow 42 feet long.

- A. 30.8°
 B. 36.5°
 C. 53.5°
 D. 59.2°

54. Which is the angle of depression in the figure below?



- F. $\angle AOT$
 G. $\angle AOB$
 H. $\angle TOB$
 J. $\angle BTO$

55. Find y in $\triangle XYZ$ if $m\angle Y = 36$, $m\angle X = 49$, and $x = 12$. Round to the nearest hundredth.

- A. 0.04
 B. 9.35
 C. 14.80
 D. 15.41

56. To find the distance between two points A and B on opposite sides of a river, a surveyor measures the distance from A to C as 200 feet, $m\angle A = 72$, and $m\angle B = 37$. Find the distance from A to B . Round your answer to the nearest tenth.



- F. 77.4 ft
 G. 201.2 ft
 H. 250.4 ft
 J. 314.2 ft

57. In $\triangle ABC$, $a = 12$, $b = 8$, and $m\angle A = 40^\circ$. Find $m\angle B$ to the nearest degree.

- A. 25
B. 56
C. 59
D. 75

58. Find the third side of a triangular garden if two sides measure 8 feet and 12 feet and the included angle measures 50° .

- F. 7.8 ft
G. 9.2 ft
H. 14.4 ft
J. 146.3 ft

59. In $\triangle DEF$, $d = 20$, $e = 25$, and $f = 30$. Find $m\angle F$ to the nearest degree.

- A. 83
B. 76
C. 56
D. 47

CHAPTER 9

60. Given $A(3, -7)$, under which reflection is $A'(3, 7)$?

- F. reflection in the x -axis
G. reflection in the y -axis
H. reflection in the origin
J. reflection in the line $y = x$



61. Name the image of BC under reflection in line m .

- A. BC
B. BA
C. AC
D. line l

62. How many lines of symmetry does a square have?

- F. 0
G. 2
H. 4
J. 8

63. Which of the following will result in a translation?

- A. reflecting in two parallel lines
B. reflecting in two intersecting lines
C. reflecting in two perpendicular lines
D. turning the figure upside down

64. Which transformation moves all points the same distance in the same direction?

- F. rotation
G. translation
H. reflection
J. dilation

65. What is the image of $X(3, 5)$ under the translation $(x, y) \rightarrow (x - 4, y + 6)$?

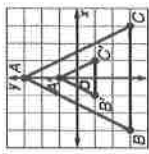
- A. $X'(7, -1)$
B. $X'(-1, -1)$
C. $X'(7, 11)$
D. $X'(-1, 11)$

66. Find the angle of rotation if the preimage is reflected in perpendicular lines.

- F. 45°
G. 90°
H. 180°
J. 360°

67. What type of dilation occurs with a scale factor of $\frac{3}{2}$?

- A. enlargement
B. reduction
C. congruence transformation
D. inverse transformation



F. 3

G. $\frac{2}{3}$

H. $\frac{1}{3}$

J. $-\frac{1}{3}$

69. Joe's old graphing calculator had 96 pixels across the screen. His new calculator has 144 pixels. Find the scale factor by which he increased his screen size.

- A. $\frac{1}{2}$
B. $\frac{2}{3}$
C. $\frac{3}{2}$
D. 48

70. Find the component form of \vec{AB} with $A(2, 3)$ and $B(-4, 6)$.

F. $\langle -2, 9 \rangle$

G. $\langle 2, -9 \rangle$

H. $\langle -6, 3 \rangle$

J. $\langle 6, -3 \rangle$

71. Find the magnitude of \vec{AB} with $A(3, 4)$ and $B(-1, 7)$.

A. $\langle 4, -3 \rangle$

B. 5

C. $\sqrt{13}$

D. 25

72. Find the direction of \vec{AB} with $A(3, 4)$ and $B(-1, 7)$. Round to the nearest tenth.

F. 36.9°

G. 53.1°

H. 126.9°

J. 143.1°

73. Find the image of $A(3, 7)$ under a translation by $\vec{a} = \langle -4, 2 \rangle$.

A. $A'(-7, -5)$

B. $A'(-1, 9)$

C. $A'(7, 5)$

D. $A'(1, -9)$

74. Find the magnitude of the rotational symmetry in a regular pentagon.

F. 72°

G. 36°

H. 30°

J. 5°

75. Find the coordinates of X' with $X(6, 5)$ for a dilation centered at the origin with a scale factor of -2 .

A. $X'(-10, -12)$

B. $X'(10, 12)$

C. $X'(12, 10)$

D. $X'(-12, -10)$

76. Jon enlarges a 4-inch by 6-inch photograph by 250%. What are the dimensions of the enlarged photograph?

F. 8-in. by 12-in.

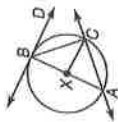
G. 10-in. by 15-in.

H. 10-in. by 12-in.

J. 15-in. by 10-in.

CHAPTER 10

Use $\odot X$.



77. Name a radius.

- A. \overline{XB}
- B. \overline{AB}

78. Name a chord.

- F. \overline{XB}
- G. \overline{XC}

79. Name a tangent.

- A. \overline{AB}
- B. \overline{BC}
- C. \overline{AC}
- D. \overline{BD}

80. The wheels on Elliot's truck each have a circumference of 22 inches. Determine the radius of each wheel.

- F. 2.5 in.
- G. 3.5 in.
- H. 5 in.
- J. 7 in.

81. In $\odot C$, $m\widehat{AB} = 72$. Find $m\angle BCD$.



- A. 72
- B. 108
- C. 144
- D. 180

82. Find the length of \overline{PQ} in $\odot R$ to the nearest hundredth.



- F. 9.42 m
- G. 4.71 m
- H. 3.14 m
- J. 1.57 m

83. In $\odot O$, $AB = 12$ centimeters, $OE = 4$ centimeters, and $OF = 4$ centimeters. Find CF .

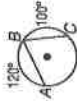


- A. 6 cm
- B. 8 cm
- C. 12 cm
- D. 24 cm

84. Find the radius of a circle if a 48-meter chord is 7 meters from the center.

- F. 14 m
- G. 24 m
- H. 25 m
- J. 41 m

85. Find $m\angle ABC$.



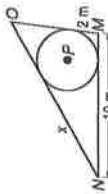
- A. 50
- B. 70
- C. 90
- D. 140

86. If $m\angle X = 126$, find $m\angle Z$.



- F. 54
- G. 63
- H. 90
- J. 126

87. If \overline{MN} , \overline{NO} , and \overline{MO} are tangent to $\odot P$, find x .



- A. 2 m
- B. 5 m
- C. 6 m
- D. 8 m

CHAPTER 11

88. Find the area of parallelogram $ABCD$. Round to the nearest tenth.



- F. 17.5 ft^2
- G. 31.25 ft^2
- H. 35 ft^2
- J. 62.5 ft^2

89. Find the area of parallelogram $WXYZ$. Round to the nearest tenth.



- A. 27 in^2
- B. 45 in^2
- C. 63.6 in^2
- D. 81 in^2

90. Find the area of a regular octagon with a perimeter of 96 centimeters.
 F. about 695.3 cm^2
 H. about 532 cm^2
 G. about 576 cm^2
 J. about 119.3 cm^2

91. Find the area of an equilateral triangle with a side length of 14 inches.
 A. about 12.1 in^2
 C. about 84.9 in^2
 B. about 42 in^2
 D. about 254.6 in^2

92. Find the area of a circle with a circumference of 20π .
 F. 400π
 H. 200π
 G. 314π
 J. 100π

93. Serena is wearing a pendant that was made by inscribing a square ruby in a sterling silver circle. The distance from the center of the pendant to its edge is 5.3 cm. Find the area of the pendant that is not covered by the ruby. Round to the nearest tenth.

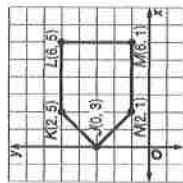
- A. 32.06
 B. 56.18
 C. 60.19
 D. 88.24

94. Find the area of the figure. Round to the nearest tenth.



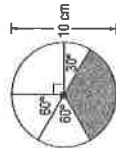
- F. 23.4 ft^2
 G. 28.3 ft^2
 H. 29.7 ft^2
 J. 36 ft^2

95. Find the area of the figure.



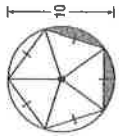
- A. 22 units^2
 B. 20 units^2
 C. 18 units^2
 D. 16 units^2

96. Find the probability that a point chosen at random lies in the shaded sector.



- F. 0.50
 G. 0.33
 H. 0.17
 J. 0.08

97. Find the area of the shaded segments.



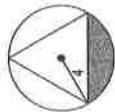
- A. about 15.3 units^2
 B. about 7.6 units^2
 C. about 3.8 units^2
 D. about 3.1 units^2

98. Find the area of the shaded region. Round to the nearest tenth.



- F. 59.1 cm^2
 G. 57.5 cm^2
 H. 25.7 cm^2
 J. 19.6 cm^2

99. Find the probability that a point chosen at random lies in the shaded region.



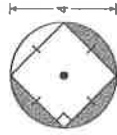
- A. about 0.17
 B. about 0.20
 C. about 0.25
 D. about 0.33

100. Find the area of the shaded region. Round to the nearest tenth.



- F. 12.6 m^2
 G. 24.6 m^2
 H. 32.9 m^2
 J. 44.9 m^2

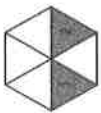
101. Find the probability that a point chosen at random lies in the shaded region.



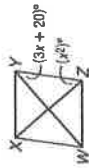
- A. about 0.09
 B. about 0.27
 C. about 0.50
 D. about 0.75

Short Answer

102. Describe a rotation that moves triangle 1 to triangle 2.



103. Find x and $m\angle WYZ$ in rhombus $XYZW$.



104. In $\triangle ABC$, $AB = 10$, $BC = 16$, $DE \perp AC$, and $DE = 6$. Find CD .



105. In $\triangle ABC$, $a = 50$, $b = 48$, and $c = 40$. Find $m\angle A$ to the nearest degree.