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REVIEW KEY

Second semester Exam Honors geometry Agan and Mohyuddin

1. A circular pizza has a diameter of 14 inches and is cut into 8 equal slices. To the nearest tenth of a square inch, which answer represents the area of one slice?



$$r = 7''$$

$$\pi \cdot r^2 = \pi \cdot 7^2$$

$$= 49\pi \text{ in}^2 \text{ total}$$

$$\frac{49\pi \text{ in}^2}{8 \text{ slices}} \approx 19.2 \text{ in}^2$$

- F 615.8 in²
- G 44.0 in²

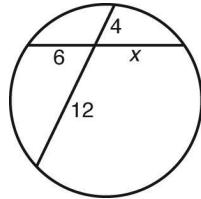
- H 22.0 in²
- J 19.2 in²

J

MMA... PIZZA

2. What is the value of x?

- A 2
- B 8
- C 10
- D 18



$$12 \cdot 4 = 6 \cdot x$$

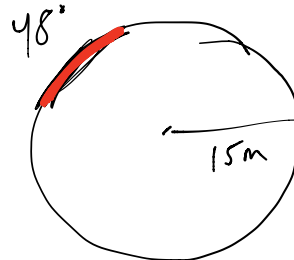
$$48 = 6x$$

$$8 = x$$

B

3. An arc in a circle with a radius of 15 meters measures 48°. What is the arc length to the nearest tenth?

- F 4 m
- G 12.6 m
- H 48 m
- J 112.5 m



$$\text{Circumf.} = 2 \cdot \pi \cdot r$$

$$= 2 \cdot \pi \cdot 15 \text{ m}$$

$$= 30\pi \text{ m}$$

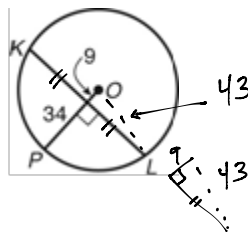
$$(30\pi \text{ m}) \left(\frac{48}{360} \right)$$

$$= 4\pi \text{ m} \approx 12.56 \text{ m}$$

J

4. To the nearest tenth, what is KL?

- A 26.3
- B 42.0
- C 52.6
- D 84.1



Pythagorean Th.

$$x^2 + 9^2 = 43^2$$

$$x^2 + 81 = 1849$$

$$\sqrt{x^2} = \sqrt{1768}$$

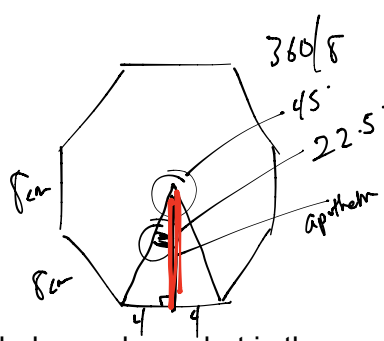
$$x \approx 42.1$$

$$\frac{x}{2}$$

$$\frac{42.1}{2}$$

$$21.05$$

D



$$\tan 22.5 = \frac{4}{a}$$

$$\frac{a \cdot (0.414)}{0.414} = 4$$

$$a = 9.657$$

opp
adj.

$$A = \frac{1}{2} \cdot a \cdot P$$

$$A = \frac{1}{2} \cdot (9.657) \cdot (64)$$

$$A \approx 309.2 \text{ cm}^2$$

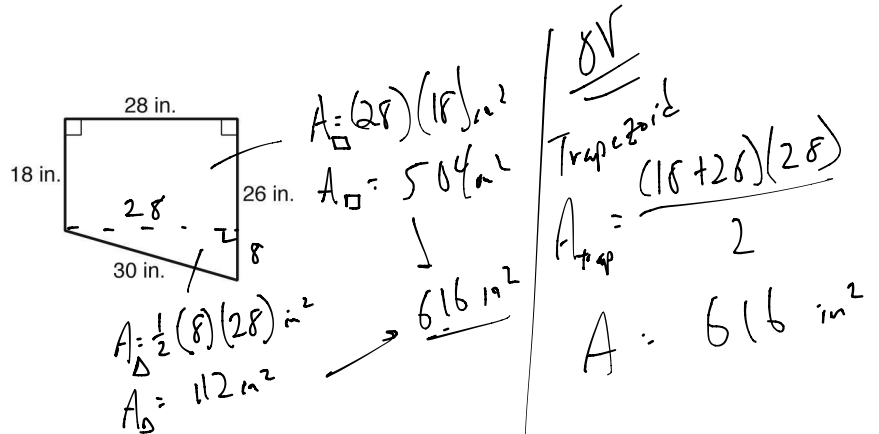
H

5. To the nearest whole number, what is the area of a regular octagon with a side length of 8 centimeters?

- F 128 cm² H 309 cm²
G 256 cm² J 618 cm²

6. When Sandra lowered the venetian blind, it fell crooked and stopped as shown. What area of the window did the blind cover?

B

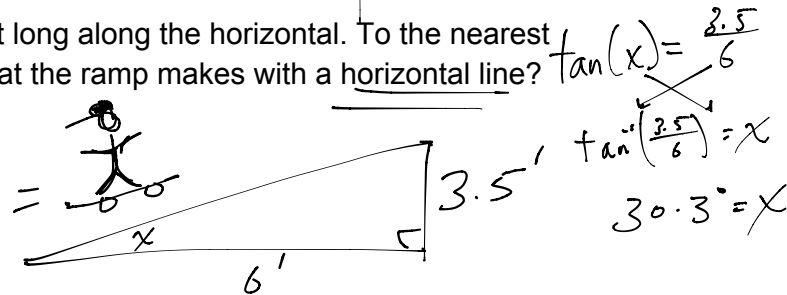


- A 102 in² C 660 in²
B 616 in² D 812 in²

7. A skateboard ramp is 3.5 feet high and 6 feet long along the horizontal. To the nearest degree, what is the measure of the angle that the ramp makes with a horizontal line?

G

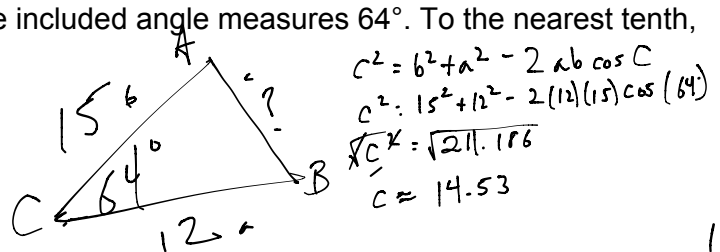
- F 27° H 60°
G 30° J 63°



Two sides of a triangle measure 15 centimeters and 12 centimeters. The included angle measures 64°. To the nearest tenth, what is the length of the third side?

B

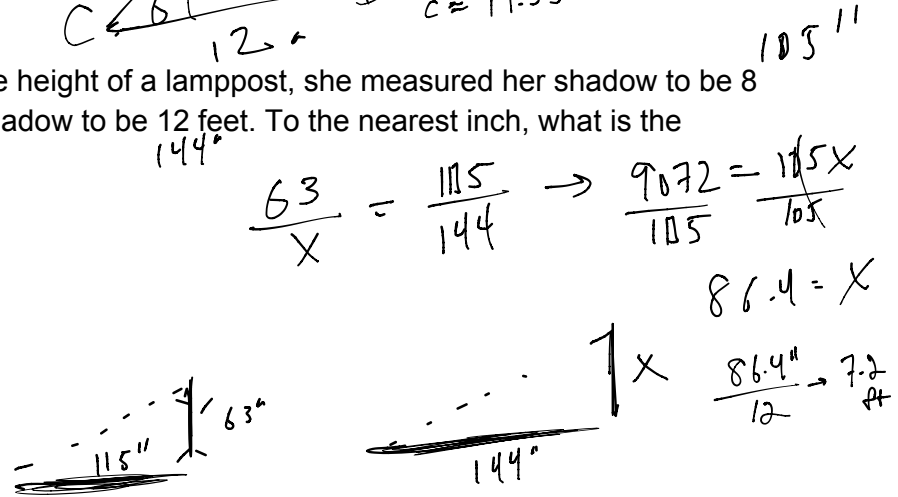
- A 6.0 cm C 19.2 cm
B 14.5 cm D 23.0 cm



8. Ann is 5 feet 3 inches tall. To find the height of a lamppost, she measured her shadow to be 8 feet 9 inches and the lamppost's shadow to be 12 feet. To the nearest inch, what is the height of the lamppost?

B

- A 6 ft 3 in. C 15 ft 0 in.
B 7 ft 2 in. D 20 ft 0 in.



$$\frac{6}{3} = \frac{8}{x} \rightarrow 6x = 24$$

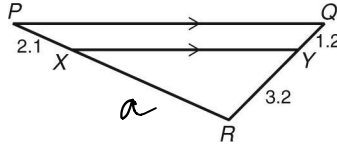
$$x = 4$$

9. The ratio of the sides of a triangle is 3 : 5 : 6. If the longest side is 8 inches, what is the length of the shortest side?

A 2.25 in. C 4.5 in.
 B 4 in. D 5 in.

B

10. What is PR ?



$$\frac{3.2}{1.2} = \frac{a}{2.1}$$

$$\frac{6.72}{1.2} = \frac{1.2a}{1.2}$$

$$5.6 = a$$

$$PR = 5.6$$

$$\frac{5.6}{1.2} = 4.666$$

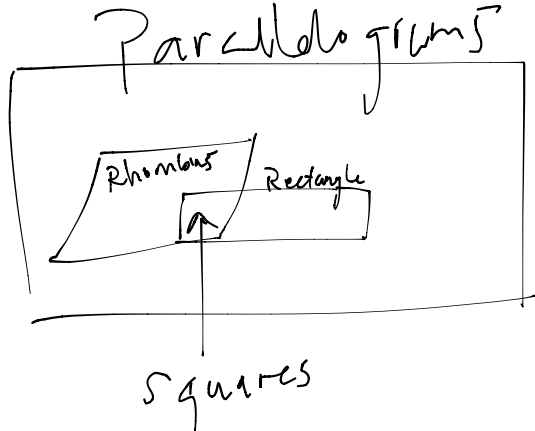
$$7.7$$

F 4.1 H 6.2
 G 5.6 J 7.7

J

11. Which statement is NOT always true?

F A rhombus is a square.
 G A rhombus is a parallelogram.
 H A square is a rectangle.
 J A rectangle is a parallelogram.



F

12. The vertices of a quadrilateral are (4, 6), (7, 2), (1, 5), and (4, 3). Which is the best classification for the quadrilateral?

A parallelogram C rectangle
 B rhombus D square

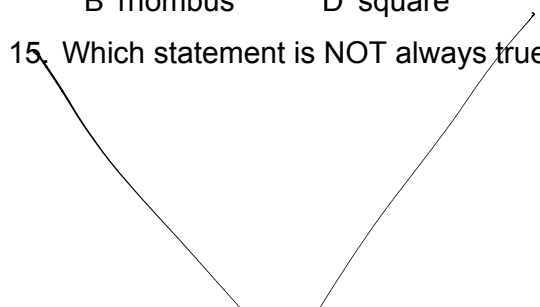
13. The vertices of a quadrilateral are (4, 6), (7, 2), (1, 5), and (4, 3). Which is the best classification for the quadrilateral?

A parallelogram C rectangle
 B rhombus D square

14. The vertices of a quadrilateral are (4, 6), (7, 2), (1, 5), and (4, 3). Which is the best classification for the quadrilateral?

A parallelogram C rectangle
 B rhombus D square

15. Which statement is NOT always true?

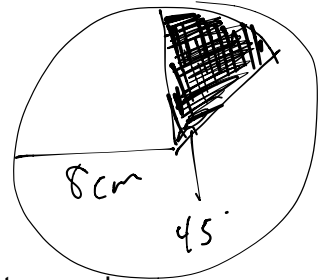
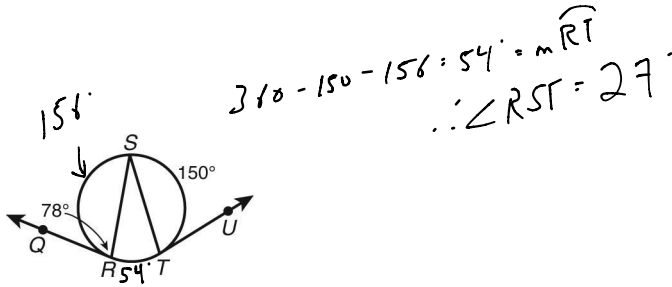


- F A rhombus is a square.
- G A rhombus is a parallelogram.
- H A square is a rectangle.
- J A rectangle is a parallelogram.

repeat of 11, 0, 11,

16. What is $m\angle RST$?

- F 27°
- G 54°
- H 76.5°
- J 85.5°



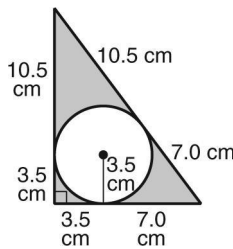
17. To the nearest tenth, what is the area of a sector with a radius of 8 centimeters and a central angle of 45° ?

- A 4.5 cm^2
- B 25.1 cm^2
- C 50.3 cm^2
- D 100.5 cm^2

$\pi \cdot r^2 \rightarrow 64\pi$ total
 $(64\pi) \left(\frac{45}{360}\right) = 8\pi$
 ≈ 25

18. To the nearest tenth, what is the area of the shaded region?

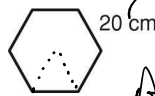
- F 35.0 cm^2
- G 44.0 cm^2
- H 51.5 cm^2
- J 112.0 cm^2



$A_{\Delta} - A_{\circ}$
 $\frac{1}{2} (10.5 \text{ cm})(14 \text{ cm}) - \pi (3.5)^2$
 Calculator $\rightarrow 35 \text{ cm}^2$

20. To the nearest tenth, what is the area of the regular hexagon?

- A 120.0 cm^2
- B 240.0 cm^2
- C 519.6 cm^2
- D 1039.2 cm^2



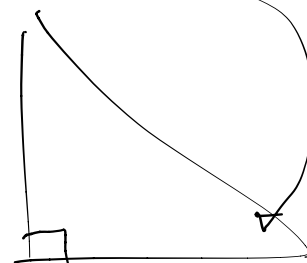
$A = \frac{1}{2} \cdot a \cdot p$
 $A = \frac{1}{2} \cdot (10\sqrt{3}) \cdot (20)$
 $A = \frac{600\sqrt{3}}{1} \approx 1039.2$

21. The legs of a right triangle measure 14 and 25. To the nearest tenth of a degree, what is the measure of the angle opposite the shortest side?

- F 29.2°
- G 34.1°
- H 55.9°
- J 60.8°

$\tan(x) = \frac{14}{25}$
 $\tan^{-1}\left(\frac{14}{25}\right) = x \rightarrow 29.2^\circ$

14

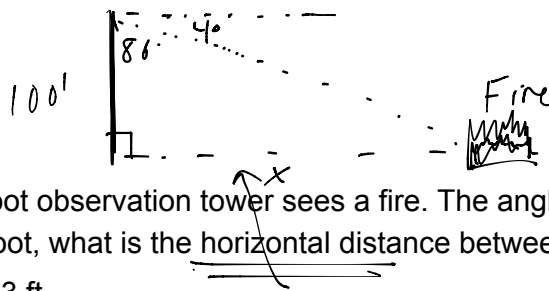


25

$$\tan(86) = \frac{x}{100}$$

$$100 \cdot \tan(86) = x$$

$$1430 \approx x$$



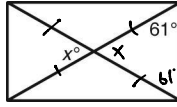
22. A forest ranger in a 100-foot observation tower sees a fire. The angle of depression to the fire is 4° . To the nearest foot, what is the horizontal distance between the tower and the fire?

- A 100 ft C 1433 ft
 B 1430 ft D 1434 ft

B

23. The figure is a rectangle. What is x ?

→ congruent diagonals

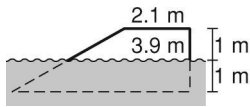


$$180 - 61 - 61 = 58^\circ$$

- A 29 C 61
 B 58 D 90

B

24. A water slide in the middle of a water park pool has opposite sides in the shape of a trapezoid. Half of the slide is below water level. What is the length of the base of the slide?



$$3.9 = \frac{2.1 + x}{2} \quad (\times 2)$$

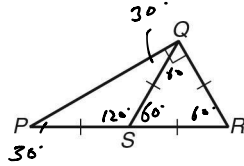
$$7.8 = 2.1 + x \rightarrow x = 5.7$$

- F 5.7 m H 7 m
 G 6 m J 7.8 m

F

25. What is the classification of $\triangle PQR$ according to its angles?

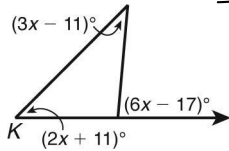
- A right
 B obtuse
 C acute
 D equiangular



A

26. What is $m\angle K$?

- F 15°
 G 25°
 H 45°
 J 55°



$$3x - 11 + 2x + 11 = 6x - 17$$

$$5x = 6x - 17$$

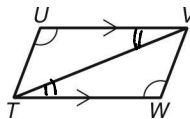
$$x = 17$$

$$2(17) + 11 \rightarrow 45$$

H

27. Which can be used to prove $\square TUV \cong \square VWT$?

- A SAS
 B AAS
 C ASA
 D HL

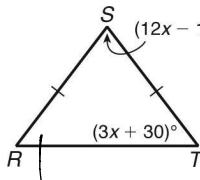


Alt interior angles \cong angles
 so \rightarrow ASA

C

28. What is $m\angle R$?

- F 45°
 G 52.5°



isosceles, so

$$3x + 30 + 3x + 30 + 12x - 15 = 180$$

$$18x + 45 = 180$$

$$x = 7.5$$

G

$$3(7.5) + 30$$

H 63°

J 75°

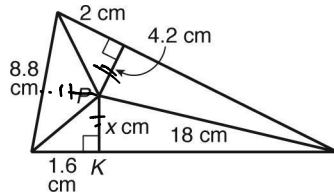
29. If P is the incenter, what is PK ?

A 3.2 cm

B 4.0 cm

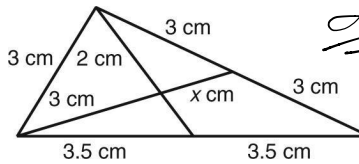
C 4.2 cm

D 4.4 cm



Medians/Centroid
 2:1 ratio
 $3 = 2x$
 $\therefore x = 1.5$

30. What is x ?



F 1 cm

H 1.75 cm

G 1.5 cm

J 2 cm

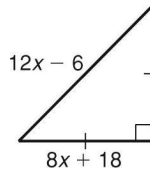
31. Which inequality shows all possible solutions for x ?

F $x \leq 6$

G $x \geq 6$

H $\frac{1}{2} < x < 6$

J $\frac{1}{2} < x \leq 6$



$$\begin{aligned} 8x + 18 &\neq 12x - 6 \\ -4x + 18 &\neq -6 \\ -4x &\neq -24 \\ x &\neq 6 \end{aligned}$$

$$\begin{aligned} 12x - 6 &\neq 0 \\ x &\neq \frac{1}{2} \end{aligned}$$

32. The circumference of a circle is 134.7 square centimeters. What is the diameter of the circle to the nearest tenth?

F 6.5 cm

H 21.4 cm

G 13.1 cm

J 42.9 cm

33. What is $\sin 49^\circ$ to the nearest tenth?

A 0.7

C 1.2

B 0.8

D 1.3

$$\begin{aligned} C &= \pi \cdot D \\ 134.7 &= 3.14 \cdot D \\ \frac{134.7}{3.14} &= \frac{3.14 \cdot D}{3.14} \\ 42.9 &= D \end{aligned}$$

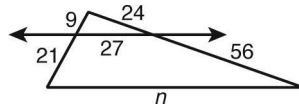
Calculator

$$\frac{9}{30} = \frac{27}{n}$$

$$9n = 810$$

$$n = 90$$

34. What is the value of n ?



J

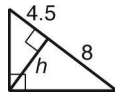
F 39

H 63

G 54

J 90

35. What is the value of h ?



$$h^2 = 8 \cdot 4 \cdot 5$$

$$h^2 = 36$$

$$h = 6$$

A

A 6

C 10

B 7.5

D 12.5

36. The measures of the interior angles of a polygon total 1620° . How many sides does the polygon have?

A 6

C 9

B 7

D 11

$$\frac{(n-2)(180)}{180} = \frac{1620}{180}$$

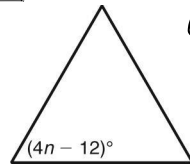
$$n-2 = 9$$

$$n = 11$$

D

37. The triangle is an equilateral triangle. What is the value of n ?

$$\frac{180^\circ}{3} = 60^\circ$$



$$4n - 12 = 60$$

$$4n = 72$$

$$n = 18$$

G

F 3

H 25.5

G 18

J 48

38. The slope of a line is 8. What is the slope of a line that is perpendicular to that line?

A 8

C $\frac{1}{8}$

B $-\frac{1}{8}$

D 8

opposite reciprocal
 $8 \rightarrow -\frac{1}{8}$

B

39. What is the slope of the line whose equation is $y+9=4(x-1)$?

F 4

H $\frac{1}{4}$

G 1

J 4

$$y+9 = 4(x-1)$$

$$y+9 = 4x-4$$

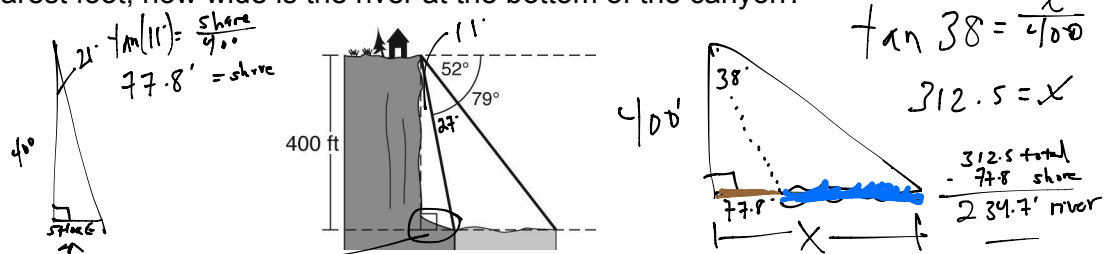
$$y = 4x-13$$

$mx+b$

J

40. From the top of a canyon, the angle of depression to the far side of the river is 52° . The angle of depression to the near side of the river is 79° . The depth of the canyon is 400 feet. To the nearest foot, how wide is the river at the bottom of the canyon?

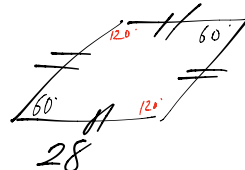
C



- A 104 ft C 235 ft
B 204 ft D 785 ft

41. One angle of a rhombus measures 60° . Each side measures 28 inches. What is the area to the nearest square inch?

- A 392 in² C 784 in²
B 679 in² D 1358 in²



42. The apothem of a 40-sided regular polygon is 11.4 meters. To the nearest square meter, what is its area if each side measures 1.9 meters?

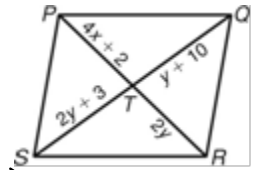
- F 266 m² H 532 m²
G 433 m² J 866 m²

Handwritten formula: $A = \frac{1}{2} \cdot a \cdot P$
 $\frac{1}{2} (11.4) (40 \cdot 1.9) = 433.2$

43. PQRS is a

Diagonals
bisect

Handwritten equations:
 $2y + 3 = y + 10$
 $y = 7$



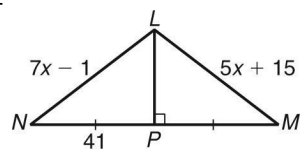
parallelogram. What is the value of x?

- A 3 C 14
B 4.5 D 42

Handwritten calculations:
 $\therefore 4x + 2 = 2(7)$
 $4x + 2 = 14 \rightarrow x = 3$
 $4x = 12$

44. \overline{LP} is the perpendicular bisector of \overline{NM} . What is LM?

Handwritten equation: $\overline{LN} \cong \overline{LM}$



Handwritten calculations:
 $7x - 1 = 5x + 15$
 $2x = 16$
 $x = 8$

- F 45 H 77.5
G 55 J 86

45. What is the value of x?

Handwritten calculation:
 $5(8) + 15 = 55$

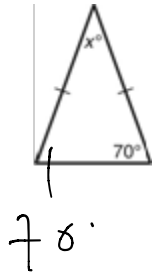
G

A

G

H

- F 20
- G 30
- H 40
- J 70



$$180 - 70 - 70 = 40$$

A

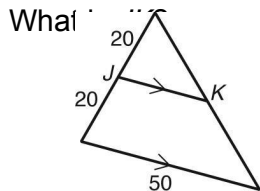
46. Which are the side lengths of an obtuse triangle?

- A 8, 11, 15
- B 8, 11, 11
- C 8, 9, 11
- D 8, 8, 11

$$c^2 > a^2 + b^2$$

H

- 47.
- F 20
 - G 40
 - H 25
 - J 50



$$\frac{20}{40} = \frac{x}{50}$$

48. Two sides of a triangle are 15 inches

and 18 inches long. Which is the least possible whole-number length of the third side?

- A 1 in.
- B 2 in.
- C 3 in.
- D 4 in.

2 sides added > other side

D

49. One leg of a 45°-45°-90° triangle measures 12 centimeters. What is the length of the hypotenuse?

- F $4\sqrt{3}$ cm
- G $6\sqrt{2}$ cm
- H $12\sqrt{2}$ cm
- J $12\sqrt{3}$ cm



H

50. What is the measure of one interior angle of a regular polygon that has 40 sides?

- A 9°
- B 40°
- C 140°
- D 171°

$$(n-2)(180) \rightarrow (40-2)(180) = 8840$$

total

$$8840 / 40 = 171 \text{ each}$$

D

51. The diagonals of a rhombus are congruent. What is the best name for the figure?

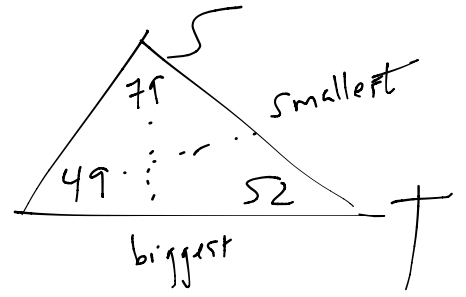
- F parallelogram
- G rhombus
- H rectangle
- J square

rectangle
and rhombus
→ square

J

52. In RST , $m\angle S = 49^\circ$ and $m\angle T = 52^\circ$. Which list shows the side lengths from least to greatest?

- F ST, RT, RS H RT, RS, ST
 G ST, RS, RT J RT, ST, RS



53. What is the slope of a line parallel to a

line whose slope is $\frac{5}{2}$?

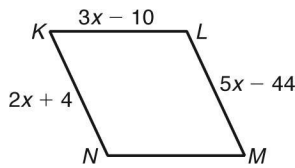
- F $-\frac{5}{2}$ H $\frac{2}{5}$
 G $-\frac{2}{5}$ J $\frac{5}{2}$

same

R

54. $KLMN$ is a parallelogram. What is the length of \overline{MN} ?

Opp sides congruent



$$2x + 4 = 5x - 44$$

$$48 = 3x$$

$$\frac{48}{3} = \frac{3x}{3} = x$$

$$3\left(\frac{48}{3}\right) - 10$$

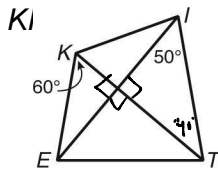
$$48 - 10$$

$$38 = KL$$

$$MN = 38$$

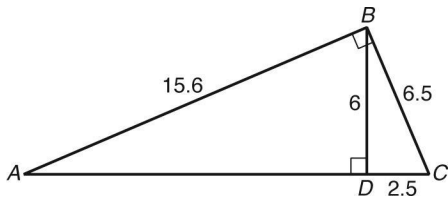
- A 32 C 38
 B 36 D 41

55. What is $m\angle TE$?



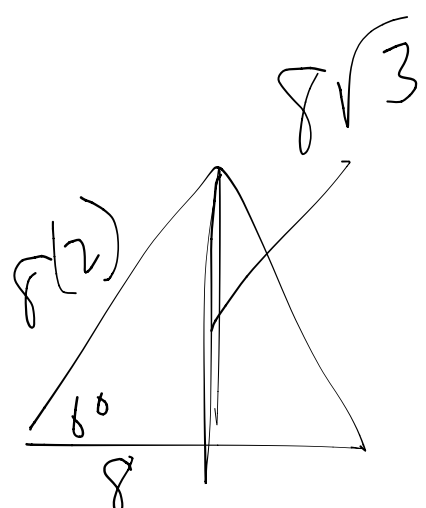
- F 30° H 80°
 G 40° J 120°

56. What is AD ?



Pythag

- F 2.5 H 11.9
 G 6 J 14.4



57. The altitude of an equilateral triangle measures $8\sqrt{3}$. What is the length of one side?

- A 4 C 16

30-60-90

B 8

D $16\sqrt{3}$

$$C = 16\pi$$

$$\therefore D = 16$$

$$\therefore r = 8$$

$$A = 64\pi$$

58. The circumference of a circle is 16π meters. What is the area of the circle?

F 8π m²

H 256π m²

G 64π m²

J 1024π m²

59. Which is the measure of a right angle?

A 80°

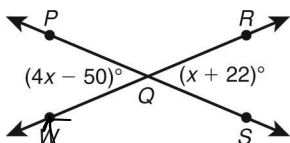
C 100°

B 90°

D 180°

[duh]

60. What is the measure of $\angle PQW$?



vertical angles

$$4x - 50 = x + 22$$

$$3x = 72$$

$$x = 24$$

F 44.4°

H 46.0°

G 45.6°

J 63.6°

plug in

61. The length and width of a rectangle are

$(x+3)$ and $(x-4)$, respectively. The area is 120 square units. What is the perimeter of the rectangle?

A 21 units

C 42 units

B 23 units

D 46 units

$$(x+3)(x-4) = 120$$

$$x^2 - x - 12 = 120$$

$$x^2 - x - 132 = 0$$

Factor

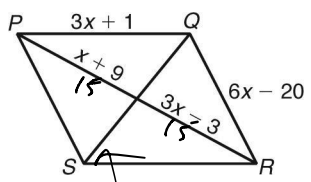
$$(x+11)(x-12) = 0$$

$$x = -11, x = 12$$

$p = 3 + 16 = 46$

62. PQRS is a parallelogram. What is PR?

Diagonals bisect,
so $x+9 = 3x-3$



A 23

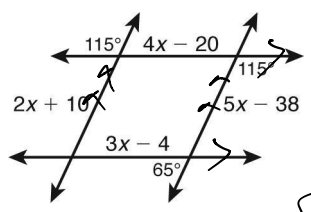
C 28

B 26

D 30

$$x = 6$$

63. If possible, find a value for x.



lines are parallel b/c alt. interior angles are congruent.

$$2x + 10 = 5x - 38$$

$$48 = 3x$$

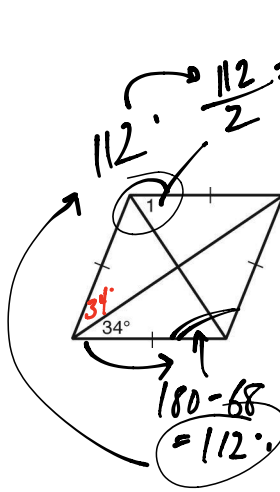
$$\frac{48}{3} = \frac{3x}{3} \rightarrow x = 16$$

A

F 15
G 16

H 18
J Not here

64. What is the measure of $\angle 1$?



Rhombus, so diagonals are angle bisectors.

B

A 34
B 56
C 68
D 112

65. The hypotenuse of an isosceles right triangle is 6. What is its area?

F 4.5
G 9
H 18
J 36

$$\frac{6}{\sqrt{2}} \cdot \frac{6}{\sqrt{2}}$$

66. Four angles of a pentagon measure 30, 73, 150, and 112. What is the measure of the fifth angle?

F 5
G 65
H 85
J 175

$$(n-2)(180)$$

67. One base angle of an isosceles triangle measures 25. What is the measure of the vertex angle?

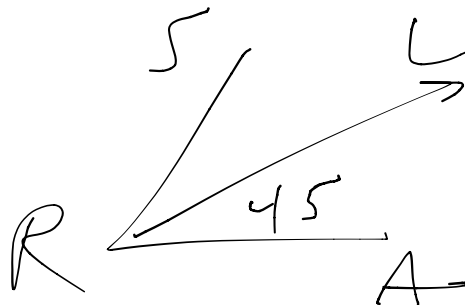
F 155
G 130
H 65
J 40

G

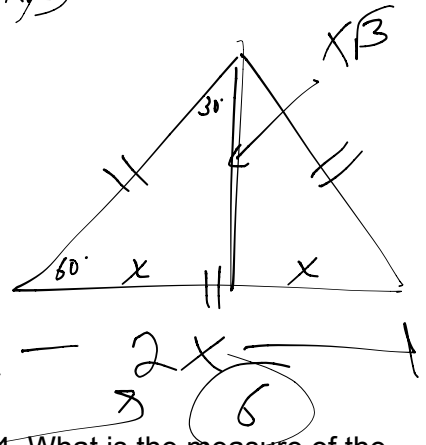
68. \overline{RL} bisects $\angle SRA$. Suppose $m\angle LRA = 45^\circ$. What type of angle is $\angle SRA$?

F acute
G obtuse
H right
J straight

H



$A = \frac{1}{2} \cdot b \cdot h$
 $(\times 2) \quad 9\sqrt{3} = \frac{1}{2} \cdot b \cdot h \quad (\times 2)$
 $18 = b \cdot h$
 $18\sqrt{3} = (2x)(x\sqrt{3})$
 $18 = 2x^2$
 $9 = x^2$
 $3 = x$



69. An equilateral triangle has an area of $9\sqrt{3}$ square inches. How many inches is the perimeter?

- A 9
- B $9\sqrt{3}$
- C 18
- D $18\sqrt{3}$

70. The sum of the measures of two vertical angles is 44. What is the measure of the supplement of one of those angles?

- F 158
- G 136
- H 68
- J 46

