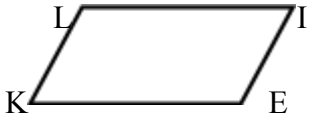
NAME: _____ SECTION: _____

Mathematics Grade 9
3rd Periodical Test

Directions: Read, analyze and understand each item carefully. Choose from among the choices the correct answer and write only the letter on a separate sheet of paper.

1. A quadrilateral with exactly one pair of parallel sides is called
   A. kite B. rectangle
   C. square D. trapezoid
2. Opposite angles of a parallelogram are
   A. adjacent B. complementary
   C. congruent D. supplementary
3. Which of the following conditions is NOT enough to conclude that a quadrilateral is a parallelogram?
   A. The diagonals are perpendicular bisector of each other.
   B. Both pairs of opposite angles are congruent and supplementary.
   C. One pair of opposite sides is both congruent and parallel to each other.
   D. The diagonals are congruent, and the opposite sides that make up a pair are parallel with each other.

For numbers 4 to 6, please refer to the figure below:
Quadrilateral LIKE is a parallelogram:



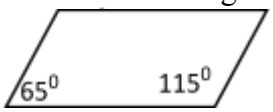
4. If $\overline{LK} = 18$, find $\overline{IE}$.
   A. 9 B. 18
   C. 36 D. cannot be determined
5. What is the perimeter of LIKE if $\overline{LK} = 10\ cm$ and $\overline{LI} = 12cm$?
   A. 11 cm B. 22 cm
   C. 44 cm D. 120 cm
6. If m∠LKE = 70, find m∠LIE.
   A. 35 B. 70
   C. 110 D. 200
7. The diagonals of a rhombus bisect the _____ of a rhombus.
   A. angles B. altitude
   C. median D. sides

8. Which of the following is a sufficient condition for quadrilateral CALM to be a parallelogram?

A. $\overline{CM} \parallel \overline{LA}$ and $\overline{ML} \cong \overline{CA}$ B. $\overline{CM} \parallel \overline{LA}$ and $\overline{MA} \cong \overline{LC}$

C. $\overline{ML} \parallel \overline{CA}$ and $\overline{ML} \cong \overline{CA}$ D. $\angle LMC \cong \angle CAL$ and $\overline{ML} \cong \overline{CA}$

9. What is true about any two consecutive angles of a parallelogram?
   A. They are always congruent.
   B. They are always supplementary.
   C. They are sometimes complimentary.
   D. They are right angles.
10. What condition/s guarantee/s that the figure below is a parallelogram?

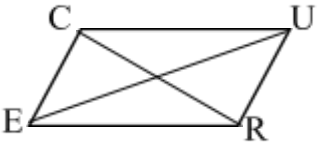


i. In a parallelogram, any two opposite sides are congruent.
ii. In a parallelogram, any two opposite angles are congruent.
iii. In a parallelogram, any two consecutive angles are supplementary

A. i only B. ii only

C. i and ii D. ii and iii

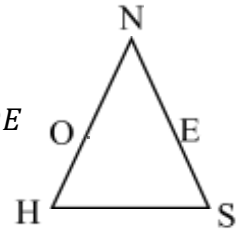
11. If the diagonals of parallelogram CURE bisect each other, then



A. $\overline{CU} \cong \overline{ER}$ B. $\overline{CE} \cong \overline{UR}$

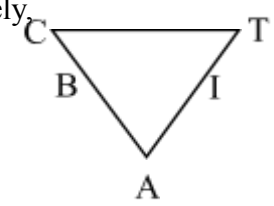
C. $\overline{CH} \cong \overline{RH}$; $\overline{EH} \cong \overline{UH}$ D. $\overline{CH} \cong \overline{EH}$; $\overline{RH} \cong \overline{UH}$

12. What theorem states that "the segment that joins the midpoint of two sides of a triangle and half as long"?
   A. Line Theorem B. Segment Theorem
   C. Midline Theorem D. Midsegment Theorem
13. Which of the following statement/s is/are true about the figure at the right?

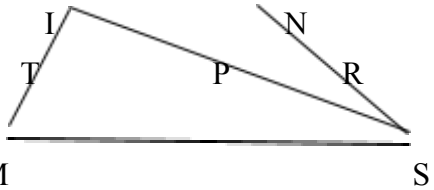


i. 2OE = HS *ii.* $OE = \frac{1}{2}HS$ *iii. 2HS = OE* *iv.* $HS = \frac{1}{2}OE$

   A. ii only B. iv only
   C. i and ii D. iii and iv
14. Given B and I as the midpoints of $\overline{CA}$ and $\overline{AT}$ respectively, how long is $\overline{CT}$ if $\overline{BI}$ is 12 m long?



   A. 12 m B. 24 m
   C. 36 m D. 48 m
15. The diagonals of an isosceles trapezoid
   A. are congruent.
   B. are parallel.
   C. are perpendicular bisector of each other
   D. bisect each other.
16. Trapezoid MINS has a median $\overline{TR}$; $\overline{TR} \parallel \overline{IN}$ and $\overline{TR} \parallel \overline{MS}$. Hence the length of $\overline{TR}$ is
   A. one half the sum of $\overline{MS}$ and $\overline{IN}$
   B. one half the sum of $\overline{TP}$ and $\overline{PR}$
   C. twice the sum of $\overline{MS}$ and $\overline{IN}$
   D. twice the sum of $\overline{TP}$ and $\overline{PR}$



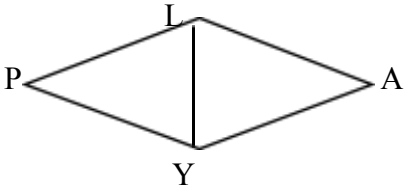
17. If the area of kite PLAY is A, and $\overline{LY}$ is x, and $\overline{PA}$ is y, then

A. A = $\frac{1}{2}$ (x + y)

B. A = $\frac{1}{2}$xy

C. A = xy

D. A = 2xy



18. In rectangle EGFH with diagonals $\overline{EF}$ and $\overline{GH}$; if $\overline{EF}$= 15, what is the measure of $\overline{GH}$?

A. 2 B. 5

C. 7.5 D. 15

19. In parallelogram LOVE, ∠L is 67°. What is the measure of its opposite angle which is ∠V?

A. 66 B. 67

C. 68 D. 69

20. An isosceles trapezoid has a median 4 m long and a base 6 m long. How long is the other base?

A. 2 m B. 4 m

C. 6 m D. 8 m

21. CARE is a kite with diagonals $\overline{CR} = 10\ cm$ and $\overline{AE} = 3\ cm$. What is its area?

A. 6.5 cm^2 B. 15 cm^2

C. 30 cm^2 D. 60 cm^2

22. If an isosceles trapezoid has a perimeter of 25 m and bases 6 m and 7 m long, how long is each leg?

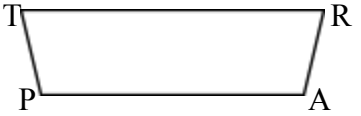
A. 6 m B. 12 m

C. 13 m D. 42 m

23. Given isosceles trapezoid TRAP, what is the value of y if ∠T= $(3y +17)^0$ and ∠R = $(2y + 13)^0$?

A. 24^0 B. 30^0

C. 35^0 D. 50^0



24. What do you call the equality of two ratios?

A. extremes B. Means

C. Proportion D. Ratio

25. Which of the following illustrates a proportion?

A. 2:4 = 8:12 B. $\frac{6}{3} = \frac{5}{6}$

C. 3:5 = 5:3 D. $\frac{8}{20} = \frac{2}{5}$

26. Which proportion leads to the equation *ta = yo*?

A. $\frac{t}{y} = \frac{o}{a}$ B. $\frac{t}{a} = \frac{y}{o}$

C . $\frac{y}{o} = \frac{t}{a}$ D. $\frac{a}{o} = \frac{t}{y}$

27. What is the value of x in the proportion $\frac{4}{3} = \frac{(x-1)}{(x-2)}$?

A. -11 B. -5

C. 5 D. 11

28. If m : n = 4 : 3, find 3m – 2n : 3m + n

A. 2 : 5 B. 3 : 4

C. 5 : 2 D. 8 : 6

29. A map is drawn to a scale of 1 cm: 150 m. If the distance between towns A and B measures 8.5 cm on the map, determine the approximate distance between these towns.

A. 1275 m B. 1725 m

C. 2175 m D. 2715 m

30. Which is NOT true about similar triangles?
A. Similar triangles are always congruent.
B. The corresponding angles similar triangles are congruent.
C. The corresponding sides of similar triangles are proportional.
D. Congruent triangles are similar.

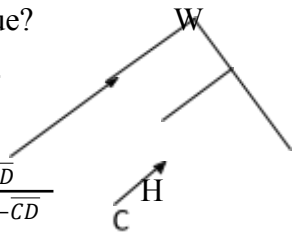
31. If the corresponding sides of two triangles are proportional, what is true about the two triangles?
A. They are similar. B. They are congruent.
C. They are just one. D. Cannot be determined.

32. $\Delta COD \sim \Delta HOW$ *because* $\overline{CD} \parallel \overline{HW}$, which of the following is not true?

A. $\frac{\overline{OD}}{\overline{DW}} = \frac{\overline{OC}}{\overline{CH}} = \frac{\overline{CD}}{\overline{HW}}$ B. $\frac{\overline{OD}}{\overline{OW}} = \frac{\overline{OC}}{\overline{OH}} = \frac{\overline{CD}}{\overline{HW}}$

D

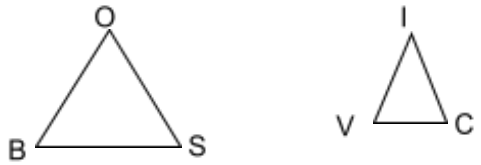
C. $\frac{\overline{DW}}{\overline{OW}} = \frac{\overline{CH}}{\overline{OH}} = \frac{\overline{HW}-\overline{CD}}{\overline{HW}}$ D. $\frac{\overline{OD}}{\overline{DW}} = \frac{\overline{OC}}{\overline{CH}} = \frac{\overline{CD}}{\overline{HW}-\overline{CD}}$



O

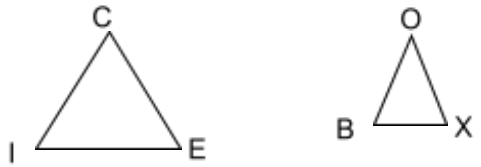
For questions 33-36, state the similarity theorem that justifies the given conclusion of the premise:
A. AA Similarity Theorem B. AAA Similarity Theorem
C. SAS Similarity Theorem D. SSS Similarity Theorem

33.



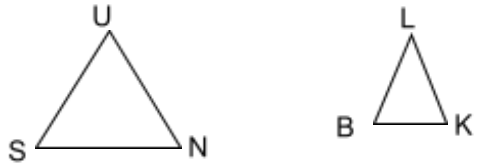
If	$\angle B \cong \angle V$, $\angle O \cong \angle I$, $\angle S \cong \angle C$
Then:	$\Delta BOS \sim \Delta VIC$

34.



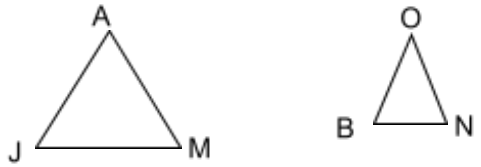
If	$\frac{CI}{OB} = \frac{CE}{OX}$ and $\angle C \cong \angle O$
Then:	$\Delta ICE \sim \Delta BOX$

35.



If	$\frac{SU}{BL} = \frac{UN}{LK} = \frac{SN}{BK}$
Then:	$\Delta SUN \sim \Delta BLK$

36.



If	$\angle A \cong \angle O$ and $\angle J \cong \angle B$
Then:	$\Delta JAM \sim \Delta BON$

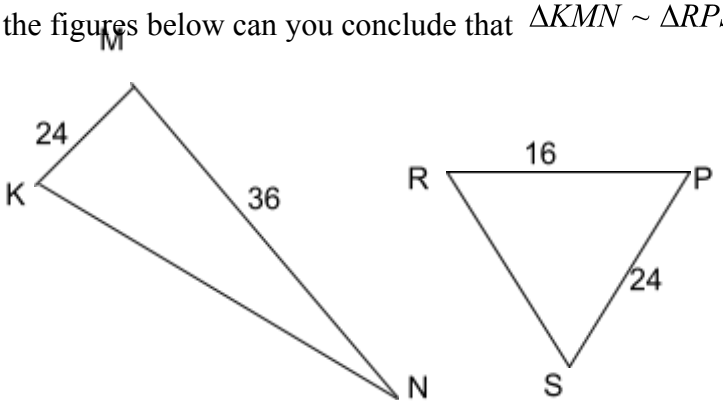
37. Given that RS = 26 and KN = 40 from the figures below can you conclude that $\Delta KMN \sim \Delta RPS$?

A. Yes, by SSA Similarity Theorem

B. Yes by SSS Similarity Theorem

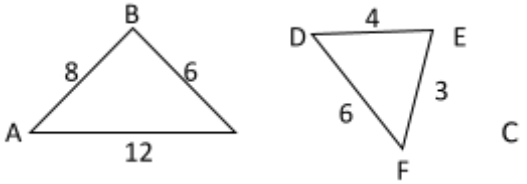
C. Yes, by SS Similarity Theorem

D. No, they are not similar at all.



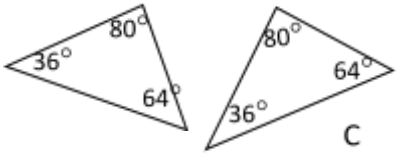
38. What similarity theorem applies to the two triangles below?

A. AA
B. AAA
C. SAS
D. SSS



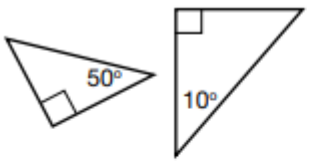
39. What similarity theorem applies to the two triangles below?

A. AA
B. AAA
C. SAS
D. SSS



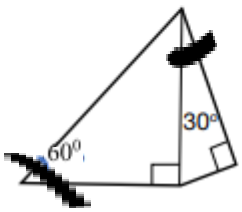
40. Which of the following pairs of triangles cannot be proved similar?

A.



B.

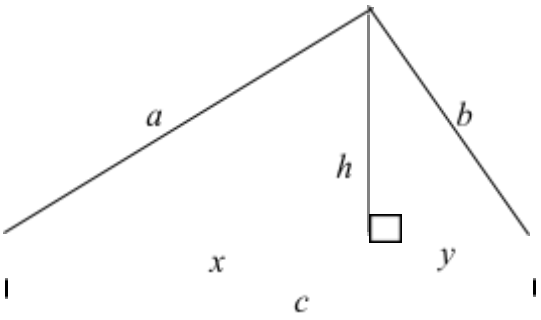
C.



D.

41. In a right triangle, the sum of the squares of the two legs is equal to the
   A. hypotenuse. B. square of the hypotenuse.
   C. the square root of the hypotenuse. D. the measure of the right angle.
42. What theorem will you use to find the diagonal of a 10 cm by 8 cm rectangle?
   A. Right Triangle Proportionality Theorem
   B. Pythagorean Theorem
   C. Triangle Proportionality Theorem
   D. Triangle Angle Bisector Theorem
43. In an isosceles right triangle, one leg measures 7 cm. which is the correct solution for solving the hypotenuse of the said triangle?
   A. 7 x 7 B. $\sqrt{7 + 7}$
   C. $\sqrt{7^2 + 7^2}$ D. $7^2 + 7^2$

For nos. 44-46, refer to the illustration at the right.



44. If x = 5 and y = 10, find h.
   A. $\sqrt{2}$ B. 2
   C. $5\sqrt{2}$ D. $5\sqrt{5}$
45. If y = 3 and c = 12, find b.
   A. 2 B. 4
   C. 6 D. 36
46. If a = 20 and c = 25, find x.
   A. 4 B. $10\sqrt{5}$
   C. 16 D. data given are nor sufficient to solve for x
47. A 12-ft ladder is placed 4 ft from the base of the wall. How far up the wall will the ladder reach?
   A. $2\sqrt{8}\ ft$ B. $8\ ft$
   C. $8\sqrt{2}\ ft$ D. $128\ ft$
48. A vacant lot has a shape of 45-45-90 triangle. If the longest side of this lot measures $10\sqrt{2}$ meters. Find the perimeter of the lot.
   A. $10\ m$ B. $20\sqrt{2}$ m
   C. $10 + 10\sqrt{2}$ m D. $100\ m$

KEY ANSWERS:

1.	D	25.	D
2.	C	26.	A
3.	A	27.	C
4.	B	28.	A
5.	C	29.	A
6.	B	30.	A
7.	A	31.	A
8.	C	32.	A
9.	B	33.	B
10.	D	34.	C
11.	C	35.	D
12.	C	36.	A
13.	C	37.	D
14.	B	38.	D
15.	A	39.	B
16.	A	40.	A
17.	B		
18.	D		
19.	B		
20.	A		
21.	B		
22.	A		
23.	D		
24.	C		

Learning Competencies		Duration (Hours)	%	No. of Questions	COGNITIVE PROCESS DIMENSION					
The learners should be able to…					Remembering	Understanding	Applying	Analyzing	Evaluating	Creatin
1	determines the conditions that make a quadrilateral a parallelogram	2	6	3	2	1				
2	uses properties of a paralleologram to find measures of angles, sides and other quantities involving parallelograms	2	6	3	1	2				
3	proves theorems on the different kinds of parallelogram (rectangle, rhombus, square)	3	10	5	2	2	1			
4	proves the Midline theorem	2	6	3	1	1	1			
5	proves theorems on trapezoids and kites	2	6	3	1	1	1			
6	solves problems involving parallelograms,	4	13	6	1	1	2	1	1	

	trapezoids and kites									
7	describes a proportion	2	6	3	2	1				
8	applies the fundamental theorems of proportionality to solve problems involving proportions	2	6	3	1		1		1	
9	illustrates similarity of figures	2	6	3	2	1				
10	proves the conditions for the similarity of triangles: SAS similarity theorem, SSS similarity theorem, AA similarity theorem, right triangle similarity theorem, special right triangle similarity ttheorem	3	10	5	1	1	1	1	1	
11	applies the theroems to show that given triangles are similar	2	6	3	1	1	1			
12	proves the Pythagorean theorem	2	6	3			1	1	1	
13	solves problems	3	10	5	1	1		2	1	

	involving triangle similarity and right triangles									