Name: $\qquad$ Class: $\qquad$ Date: $\qquad$

## 2019-2020 Geometry Honors District Midterm Exam (Calculator Permissible)

## Multiple Choice

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

1. $R, S$, and $T$ are collinear. $S$ is between $R$ and $T . R S=2 w+1, S T=w-1$, and $R T=18$. Use the information given and your understanding of Geometric Postulates to determine the length of $\overline{R S}$.
a. 16
b. 5
c. 13
d. 6
e. none of these
2. The diagonals of parallelogram $A B C D$ have a common midpoint.


Which of the following is the midpoint of the diagonals of $A B C D$ ?
a. $(-1,3)$
b. $(4,3)$
c. none of these
d. $(4,0)$
e. $(-1,0)$
3. In the figure (not drawn to scale), $\overrightarrow{M O}$ bisects $\angle L M N, m \angle L M O=(19 x-24)^{\circ}$, and $m \angle N M O=(x+66)^{\circ}$. Solve for $x$ and find $m \angle L M N$.

a. $2,20^{\circ}$
b. none of
c. $2,29^{\circ}$
d. $5,119^{\circ}$
e. $5,142^{\circ}$
4. The midpoint of $\overline{A B}$ is $M(4,-2)$. One endpoint is $A(-2,6)$. What is the length of $\overline{A B}$ ?
a. 5 units
b. 10 units
c. 20 units
d. 28 units
e. none of these
5. Find K , such that the points $(-2,2),(2,6)$, and $(4, \mathrm{~K})$ are collinear.
a. 4
d. 18
b. 8
e. none of these
c. $\quad 12$
6. If $\overline{A C}$ is parallel to $\overline{D F}$, what is the measure, in degrees, of $\angle A B D$ ?

a. $28^{\circ}$
d. $38^{\circ}$
b. $72^{\circ}$
e. none of these
c. $62^{\circ}$
7. Which best describes the relationship between the line that passes through $(5,-7)$ and $(1,-4)$ and the line that passes through $(-4,-8)$ and $(-7,-12)$ ?
a. same line
b. perpendicular
c. parallel
d. neither perpendicular nor parallel
8. Write the slope-intercept form of the equation of the line passing through the point $(5,5)$ and perpendicular to the line $\mathrm{y}=\frac{4}{9} \mathrm{x}-1$.
a. $y=-\frac{4}{9} x+\frac{65}{9}$
d. $y=\frac{9}{4} x-\frac{25}{4}$
b. none of these
e. $y=-\frac{6}{7} x-\frac{9}{7}$
c. $y=\frac{4}{9} x-\frac{25}{9}$
9. In the diagram, $\angle B \cong \angle E$ and $\angle C \cong \angle F$. Find the value of $x$.

a. $x=50$
b. $x=25$
c. $x=75$
d. $x=35$
e. not enough information
10. Identify the missing justifications used to find the value of $x$.
$m \angle P Q R=x-5, m \angle S Q R=x+7$, and $m \angle P Q S=100$.


Drawing not to scale

$$
\begin{array}{rl}
m \angle P Q R+m \angle S Q R=m \angle P Q S & \text { a. } \overline{\text { b. Substitution Property }} \\
x-5+x+7=100 & \text { c. Simplify } \\
2 x+2=100 & \text { d. } \overline{\text { e. Division Property of Equality }} \\
2 x=98 & x=49
\end{array}
$$

a. Angle Addition Postulate; Subtraction Property of Equality
b. Protractor Postulate; Addition Property of Equality
c. Angle Addition Postulate; Division Property of Equality
d. Protractor Postulate; Subtraction Property of Equality
11. Find the measure of the interior angles to the nearest tenth. (Drawing is not to scale.)

a. $\quad 35.5^{\circ}, 72.0^{\circ}, 72.5^{\circ}$
b. $39.5^{\circ}, 69.0^{\circ}, 71.5^{\circ}$
c. $\quad 37.0^{\circ}, 71.0^{\circ}, 72.0^{\circ}$
d. $36.4^{\circ}, 75.1^{\circ}, 68.5^{\circ}$
$\qquad$
12. Which of the following is a condition for the figure below that will prove $l_{1}| | l_{2}$

| a) $\angle a \cong \angle c$ | b) $m \angle b+m \angle d=180^{\circ}$ | c) $\angle a \cong \angle d$ | d) $m \angle a+m \angle b=180^{\circ}$ |
| :--- | :--- | :--- | :--- |


a. A only
c. B only
e. C only
g. D only
b. A, C and D
d. $\mathrm{A}, \mathrm{B}$, and C
f. B, C, and D
h. They all prove that the lines are parallel
13. It is given that $\angle 1 \cong \angle 2$. Which of the following will show that $l \| m$.

a. $\angle 1 \cong \angle 2$ is given. From the diagram, $\angle 1$ and $\angle 2$ are corresponding angles. So by the Converse of the Corresponding Angles Postulate, $l \| m$.
b. $\quad \angle 1 \cong \angle 2$ is given. From the diagram, $\angle 1$ and $\angle 2$ are alternate interior angles. So by the Converse of the Alternate Interior Angles Postulate, $l \| m$.
c. By the Converse of the Corresponding Angles Postulate, $\angle 1 \cong \angle 2$. From the diagram, $l \| m$.
d. $\angle 1 \cong \angle 2$ is given. From the diagram, $\angle 1$ and $\angle 2$ are corresponding angles. So by the Corresponding Angles Postulate, $l \| m$.

## Multiple Response

Identify one or more choices that best complete the statement or answer the question.
14. Check all that apply

a. $\quad m$ is perpendicular through P to $T$.
b. $\quad C, D, E$, and $F$ are coplanar in $T$.
c. $\quad D, P$, and $F$ are collinear.
d. $\overline{F C}$ is longer than $\overline{D F}$.
e. $\overline{D E}$ and $\overline{P F}$ are coplanar in $\mathcal{T}$.
15. For the figure shown, which statement is not true?

a. $\frac{w}{y}=\frac{x}{z}$
b. $\quad w x=y z$
c. $w z=x y$
d. $\frac{w}{x}=\frac{y}{z}$
16. Refer to the figure below.


Given: $A B=A D, m \angle 1>m \angle 2$. Then, $\qquad$ .
a. $\quad B E>E D$
b. $\quad B E<E D$
c. $A E=E C$
d. $\quad B E=E D$

Find the value of $x$. (The figure may not be drawn to scale.)
17.

a. 51
b. 49
c. $\quad 108$
d. 74
18. Triangles LMN and NWR are right triangles.


What is the length of $\overline{N W}$ ?
a. $\quad 2.5 \mathrm{~cm}$
b. 10 cm
c. $\quad 15.6 \mathrm{~cm}$
d. $\quad 14.4 \mathrm{~cm}$
$\qquad$
19. Consider Triangle ABC, graphed in the coordinate plane.


Find the perimeter of triangle ABC . Round your answer to the nearest whole number.
a. 44
b. 13
c. 64
d. 12
20. Determine the type of construction from the following steps.


Step 2:
$r$


Step 3:
$\times$

a. Parallel from a point on the line
d. Segment Bisector
b. Parallel from a point not on the line
e. Perpendicular from a point on the line
c. Congruent Segments
f. Perpendicular from a point not on the line
21. On a map, Main Street intersects Elm Street and forms a right angle. Summer Street intersects both Main Street and Elm Str What shape could best be used to model the area between these streets if all the streets are straight?
a. Triangle
b. Square
c. Rectangle
$\qquad$
d. Hexagon
22. $A B C$ has vertices $A(0,10), B(8,11)$, and $C(6,3)$. Which coordinate proof correctly shows that $A B C$ is a scalene triangle?
a. $\quad A C=\sqrt{(6-0)^{2}+(3-10)^{2}}=\sqrt{85}$
c. $A C=\sqrt{(6-0)^{2}+(3-10)^{2}}=\sqrt{85}$
$B C=\sqrt{(6-8)^{2}+(3-11)^{2}}=\sqrt{68}$ $B C=\sqrt{(6-8)^{2}+(3-11)^{2}}=\sqrt{68}$
$A B=\sqrt{(8-0)^{2}+(11-10)^{2}}=\sqrt{65}$
The sides of the triangle are all of different lengths which means that $\triangle A B C$ is a scalene triangle.
b. $A C=\sqrt{(6-0)^{2}+(3-10)^{2}}=\sqrt{85}$
$B C=\sqrt{(6-8)^{2}+(3-11)^{2}}=\sqrt{68}$
$A B=\sqrt{(8-0)^{2}+(11-10)^{2}}=\sqrt{65}$
d. $\begin{aligned} A C & =\sqrt{(6-0)^{2}+(3-10)^{2}}=\sqrt{85} \\ A B & =\sqrt{(8-0)^{2}+(11-10)^{2}}=\sqrt{65}\end{aligned}$

The sides of the triangle are all of different lengths which means that $\triangle A B C$ is an isosceles triangle.
23. $\overline{J K}$ in the coordinate plane has endpoints with coordinates $(-4,11)$ and $(8,-1)$. Find all possible locations for point M so M divides $\overline{J K}$ into two parts with lengths in a ratio of 1:3.
a. $(-1,8)$
b. $(2,5)$
c. $(5,2)$
d. $(8,-1)$
e. $(-4,11)$
24. Which of the following can be concluded given that ABC and CBD are a linear pair?
a. $\angle \mathrm{ABC}$ and $\angle \mathrm{CBD}$ are supplementary.
b. $\angle \mathrm{ABC}$ and $\angle \mathrm{CBD}$ are complementary.
c. $\overrightarrow{B A}$ and $\overrightarrow{B D}$ are opposite rays.
d. $\angle \mathrm{ABC}$ and $\angle \mathrm{CBD}$ are adjacent angles.
e. $\angle \mathrm{ABC} \angle \mathrm{CBD}$

