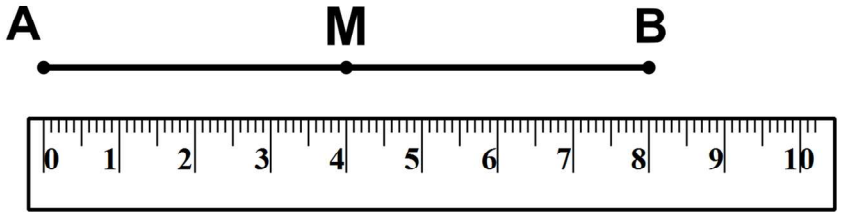
Name: _____ Date: _____

# GEOMETRIC TERMINOLOGY
## N-GEN MATH® 8

In all areas of math, **terminology** is important to know and understand. **Terminology** is just a fancy word for the **specific vocabulary** that applies to a certain set of knowledge or study. You've already seen a lot of geometric terminology, such as line, ray, point, segment, and angle. In this lesson we will learn additional **terms** that we need to know to study geometry.

***Exercise* #1:** The diagram below shows segment $\overline{AB}$ with point M plotted on it. A 10 cm ruler is given for measurement purposes.




(a) What is the length of $\overline{AB}$? This is known as the **measure** of the segment.

AB =

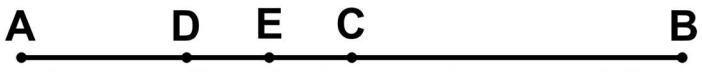
(b) What is the measure of segments $\overline{AM}$ and $\overline{BM}$?

AM = BM =

(c) Point M is called the **midpoint** of segment $\overline{AB}$. Why does this **term** make sense?

Every line segment has one unique point that lies at its center or middle known as its **midpoint**.

***Exercise* #2:** In the diagram below points A, B, C, D, and E all lie on a straight line (are all **collinear**). Point C is the midpoint of $\overline{AB}$, point D is the midpoint of $\overline{AC}$ and point E is the midpoint of $\overline{CD}$. If the length of $\overline{AB}$ is 40 then what is the length of $\overline{EB}$?



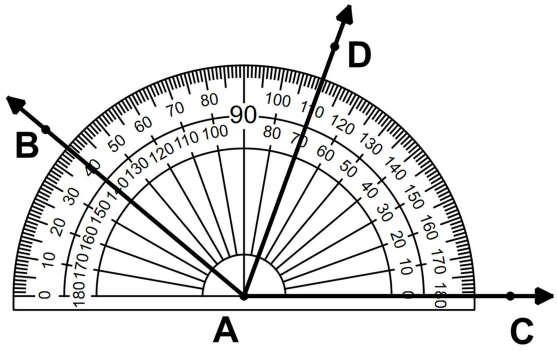

***Exercise* #3:** Why do segments have midpoints, but lines do not?

Another important idea in geometry is that of a **bisector**. As its name implies, **a bisector cuts a geometric object into two of the same types of objects** that have the **same measure**. We can have **segment bisectors** (other segments or lines) and **angle bisectors** (lines, segments, or rays).

***Exercise* #4:** In the diagram below $\angle BAC$ has ray $\overrightarrow{AD}$ drawn from its vertex point A.

(a) What is the measure of $\angle BAC$?

(b) Explain how you can tell that $\overrightarrow{AD}$ **bisects** $\angle BAC$.



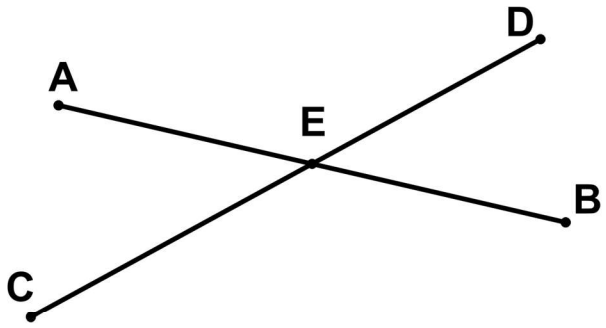

***Exercise* #5:** In the diagram below segment $\overline{CD}$ bisects segment $\overline{AB}$. Based on this information, which of the following pairs of segments must have the same length? Explain your choice.

(1) $\overline{AB}$ and $\overline{CD}$

(2) $\overline{CE}$ and $\overline{DE}$

(3) $\overline{AE}$ and $\overline{BE}$

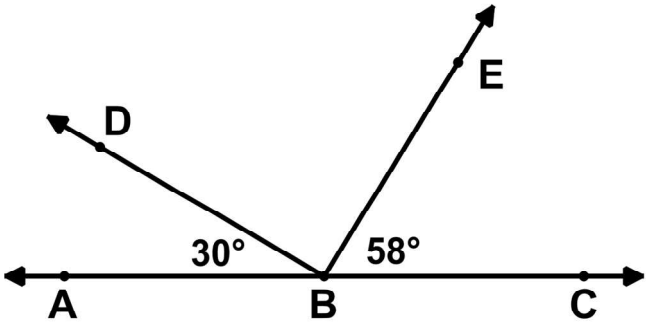
(4) $\overline{DE}$ and $\overline{BE}$




Our final piece of terminology is the term **perpendicular**. This describes two lines, segments, or rays that form **right angles** with one another.

***Exercise* #6:** In the diagram below A, B, and C lie on a straight line. The measure of $\angle EBC$ is $58°$ and the measure of $\angle ABD$ is $30°$.

Are rays $\overrightarrow{BD}$ and $\overrightarrow{BE}$ **perpendicular**? Justify your answer.



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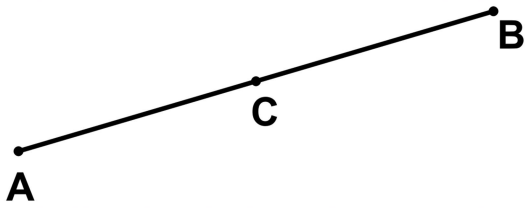
# GEOMETRIC TERMINOLOGY
# N-GEN MATH® 8 HOMEWORK

## FLUENCY

1. In the diagram below point C is the midpoint of $\overline{AB}$. If the length of $\overline{AB}$ is 32 and the length of $\overline{AC}$ is given by $\frac{x}{2}+10$ then which of the following is the value of $x$?




(1) 11 (3) 3

(2) 12 (4) 44

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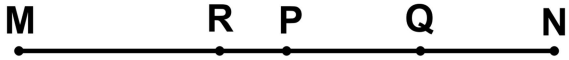
2. Points M, R, P, Q, and N all lie on a straight line. Point P is the midpoint of segment $\overline{MN}$. As well, point Q is the midpoint of segment $\overline{PN}$. Finally, point R is the midpoint of segment $\overline{MQ}$. If the length of $\overline{MN}$ is 24 units, which of the following is the length of $\overline{MR}$?




(1) 6 (3) 10

(2) 9 (4) 12

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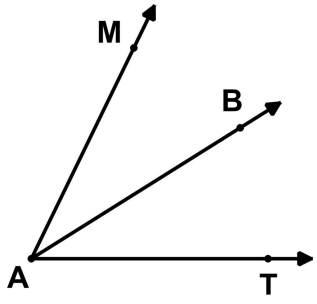
3. In the diagram below, ray $\overrightarrow{AB}$ bisects $\angle MAT$. If the measure of $\angle MAT$ equals 64° and the measure of $\angle BAT$ is given by the expression $2x-10$, then which of the following is the value of $x$?




(1) 14

(2) 15

(3) 21

(4) 37

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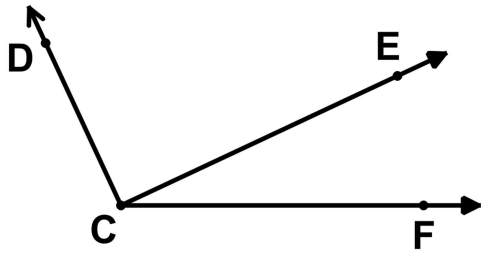
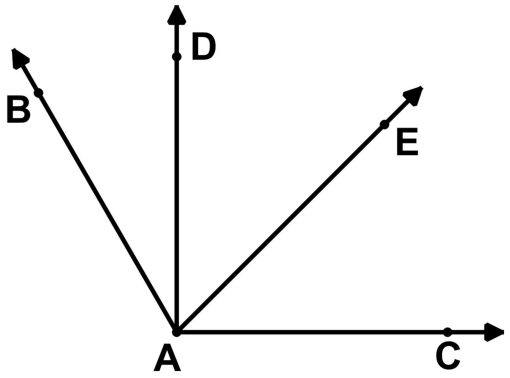
4. In the diagram shown, ray $\overrightarrow{CD}$ is perpendicular to ray $\overrightarrow{CE}$. If the measure of $\angle DCF$ is 115° then what is the measure of $\angle ECF$?



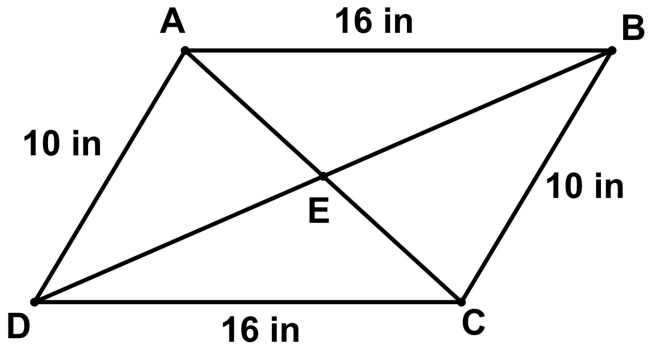
5. In the diagram shown, rays $\overrightarrow{AD}$ and $\overrightarrow{AC}$ are perpendicular. Ray $\overrightarrow{AE}$ bisects $\angle DAC$ and the measure of $\angle DAB$ is $30°$.

   What is the measure of $\angle BAE$? Justify.




## USING YOUR MATH

6. The **diagonals** of a **parallelogram** bisect each other. In the diagram below, parallelogram ABCD has diagonals $\overline{AC}$ and $\overline{BD}$ whose lengths are 12 inches and 24 inches, respectively. What is the perimeter of triangle BEC?




## REASONING

7. Given all the rays starting at point M below, which pair are perpendicular? Justify how you can tell from the angle measurements.