STANDARD VII: The student will be able to solve problems involving a variety of algebraic and geometric concepts.

OBJECTIVE

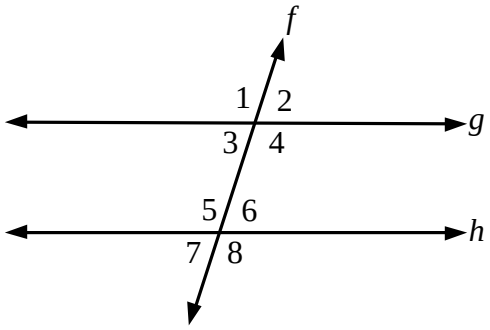
1. Apply properties of angles and relationships between angles.

ELIGIBLE CONTENT

- The following properties and relationships may be included:
  - vertical angles
  - adjacent angles
  - supplementary angles
  - complementary angles
  - linear pair (adjacent supplementary angles)
  - relationships among the measures of angles formed by two parallel lines and a transversal
- Word problems may be used.
- The knowledge of the sum of measures of angles may be used.
- Determining measurements of angles when the measurements of angles are expressed as algebraic expressions may be required.

SAMPLE ITEMS

1 Given: Line g is parallel to line h.



If $m\angle 3 = 72°$, what is the sum of $m\angle 8$ and $m\angle 5$?

A 72°

B 108°

C 114°

D 216°

2 A convex polygon has 9 sides. What is the sum of the measures of the interior angles?

A 1260°

B 1618°

C 1620°

D 1980°

3 The measure of an angle in degrees is $3x$. Which of these represents the measure of its supplement?

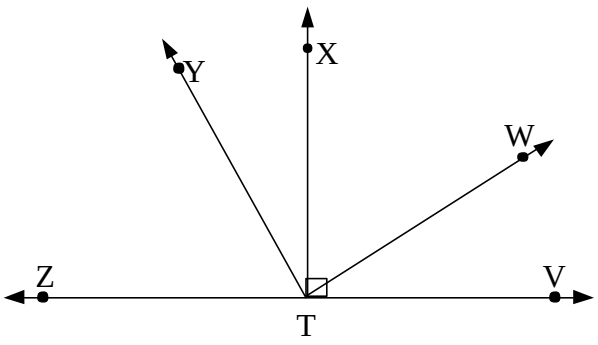
A $3x + 90$

B $3x + 180$

C $90 - 3x$

D $180 - 3x$

4 In the diagram below, $m\angle WTV = 30°$, $m\angle YTV = 120°$, and $m\angle XTV = 90°$.



Which of these angles has the same measure as $\angle WTV$?

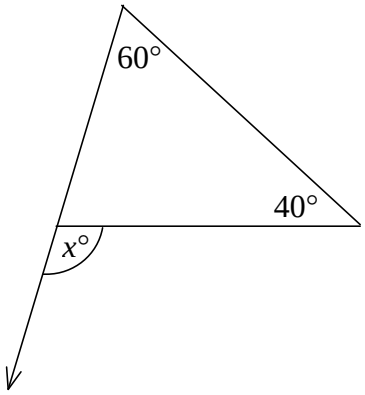
A $\angle XTW$

B $\angle YTX$

C $\angle YTW$

D $\angle ZTY$

5 What is the value of x?



A 40º

B 60º

C 80º

D 100º

6 What is the supplement of an angle that measures 60° ?

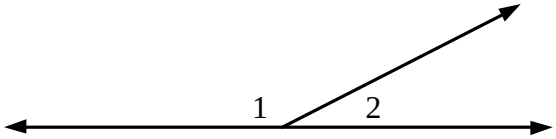
A 30°

B 60°

C 120°

D 150°

7 Given: $\angle 1$ and $\angle 2$ are a linear pair.



If $m\angle 1$ is eight times $m\angle 2$, what is $m\angle 1$?

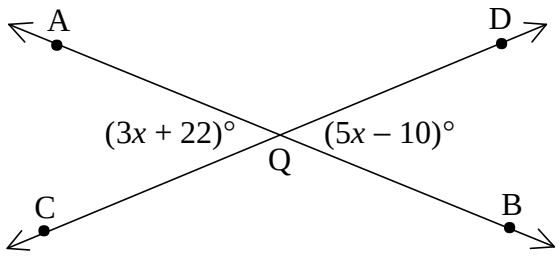
A 20°

B 22.5°

C 157.5°

D 160°

8 Lines AB and CD intersect at point Q. What is the measure of $\angle AQC$?



A 16°

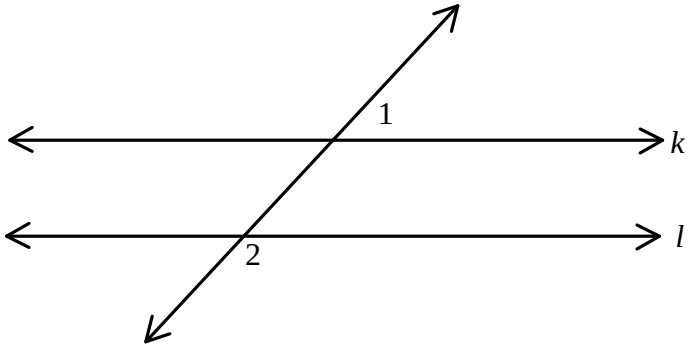
B 21°

C 70°

D 85°

9 Given: $k \parallel l$, $m\angle 1 = 55°$

What is $m\angle 2$?



A 25°

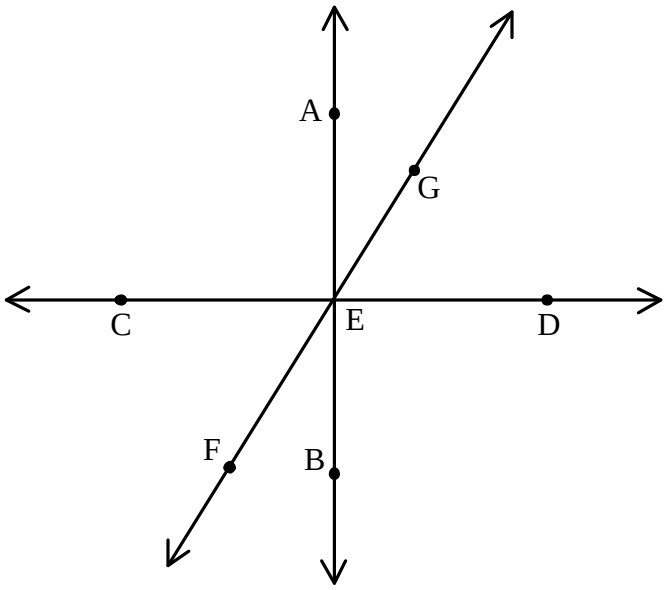
B 55°

C 125°

D 155°

10 Given: $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$, $m\angle AED = (5x + 40)°$, $m\angle FEB = (3x)°$

What is the value of $m\angle AEG$?



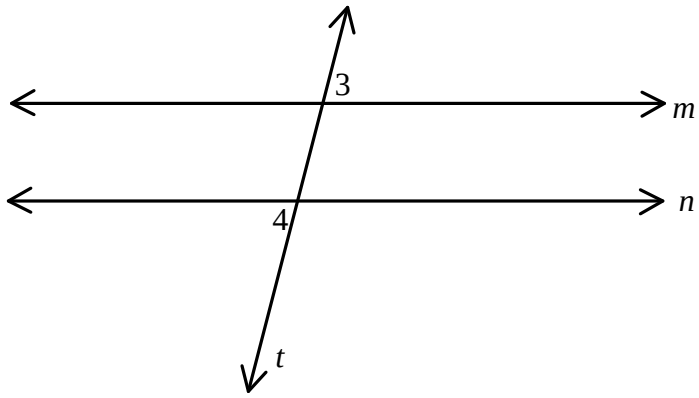
A 28°

B 30°

C 60°

D 96°

11 Given: $m \parallel n$, $m\angle 3 = (2x + 5)°$, $m\angle 4 = (3x - 20)°$
What is the value of x?



A 21

B 25

C 39

D 55