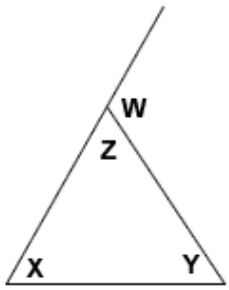
Grade 8 Mathematics EOG (GSE) Quiz Answer Key

Geometry - (MGSE8.G.5) Use Informal Arguments

Student Name: _____ Date: _____

Teacher Name: THUYNGA DAO Score: _____

1)

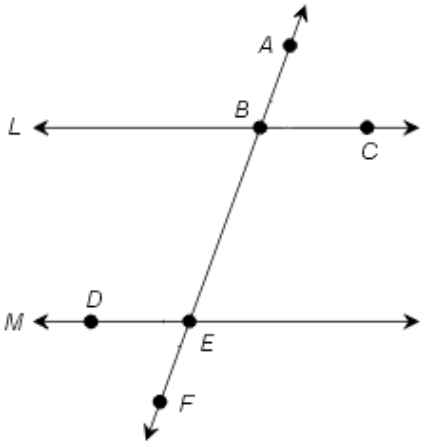


Which angle is an EXTERIOR angle?

A) W
B) X
C) Y
D) Z

Explanation:
Angle **W** is exterior, since one of its sides is not a side of the triangle.

2)

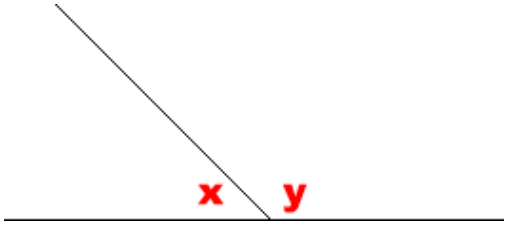


Given that lines L and M are parallel, which of the statements is true?

A) ∠ DEF ≅ ∠ EBC
B) ∠ ABC ≅ ∠ DEF
C) ∠ ABC ≅ ∠ EBC
D) ∠ BEF ≅ ∠ ABC

Explanation:
The correct statement is ∠**ABC** ≅∠**DEF**. Since lines L and M are parallel angle ABC and angle DEF are alternate exterior angles so the are congruent.

3)



Angle x measures 42°. Find the measure of angle y.

A) 42°
B) 48°
C) 138°
D) 148°

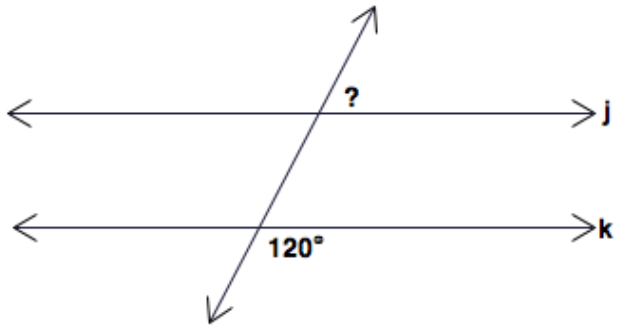
Explanation:
Since both angles make up the sum of the straight line, they are supplementary, or 180°, so 180°- 42° = **138°**.

4) The angles of a triangle are 2x, 3x, and 4x degrees. Find the value of x.

A) 20
B) 30
C) 40
D) 50

Explanation:
20. The three angles of the triangle add up to 180 degrees. So, 2x + 3x +4x = 9x = 180, so x = 20.

5)

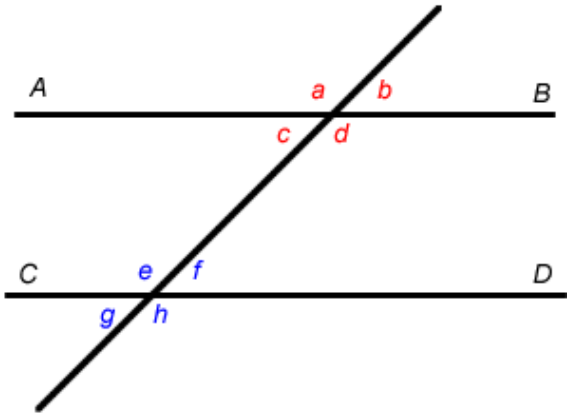


Given that j || k, what is the measure of the missing angle?

A) 30°
B) 40°
C) 60°
D) 120°

Explanation:
The solution is **60°**. Since the angles are on the same side of the transversal, and outside of the two parallel lines, we can conclude that the angles are supplementary. These are sometimes called "same-side exterior angles".

6)

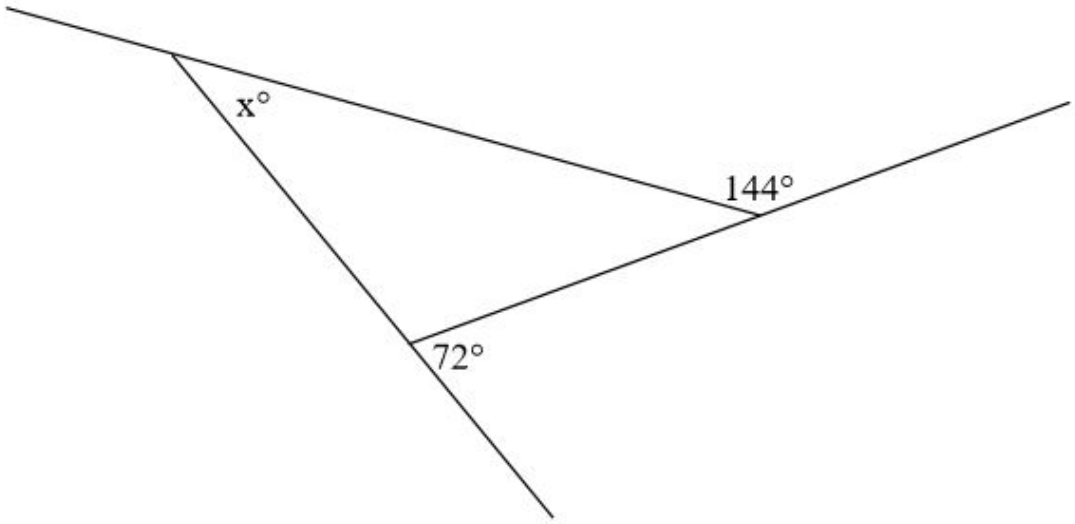


∠a are ∠e are _____ angles.

A) perpendicular
B) corresponding
C) complementary
D) alternate interior

Explanation:
Corresponding angles are formed when two parallel lines are intersected by a third line and they have equal measure.

7)



Find the measure of ∠x.

A) 26°
B) 30°
C) 36°
D) 39°

Explanation:
36°

Exterior angles of a triangle supplementary angles (equal 180°).

and,

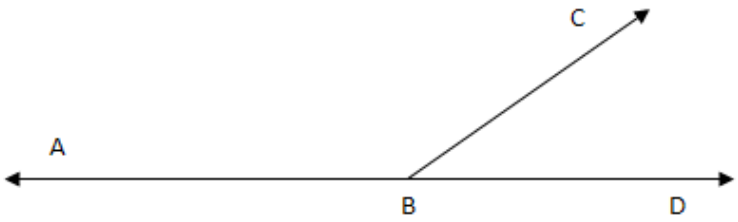
The sum of the three interior angles in a triangle is always 180°.

180 - 144 = 36
180 - 72 = 108

then,

x + 36 + 108 = 180
x + 144 = 180
x = 36

8)

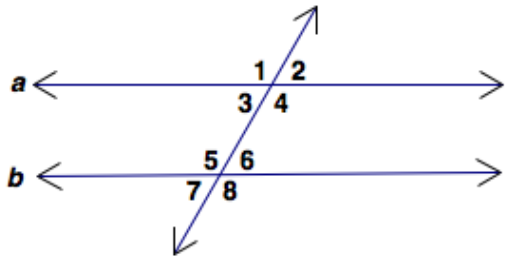


∠ABC and ∠CBD are

A) complementary.
B) supplementary.
C) congruent.
D) vertical.

Explanation:
Since the angles sum up to 180°, they are **supplementary.**

9)



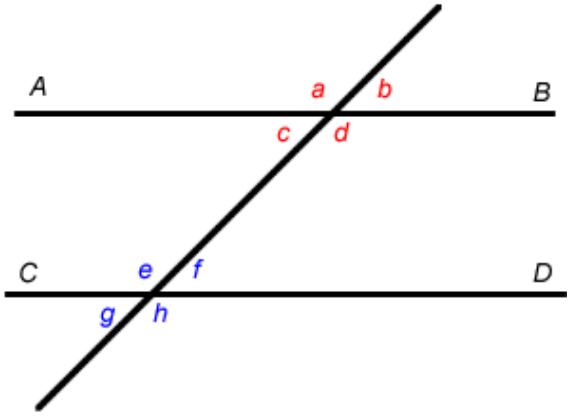
Given: line *a* is parallel to line *b*

Identify a pair of congruent alternate interior angles.

A) 3 & 6
B) 1 & 8
C) 2 & 5
D) 4 & 8

Explanation:
Angles **3 & 6** are congruent alternate interior angles. These angles line between the two lines on opposite sides of the transversal.

10)

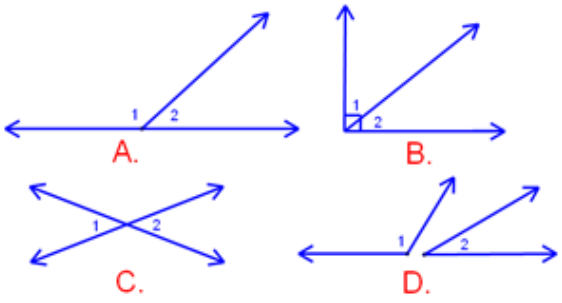


In the diagram shown, ∠a and ∠h are_____.

A) vertical angles
B) linear pair angles
C) corresponding angles
D) alternate exterior angles

Explanation:
The angles are **alternate exterior angles**. They are angles that lie outside of the two lines on opposite sides of the transversal.

11)



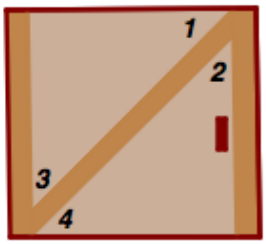
Which diagram shows ∠1 and ∠2 as vertical angles?

A)
B)
C)

D)

Explanation:
Solution: **B**. Vertical angles are nonadjacent angles that are formed by intersecting lines. The angles shown in choice C fit this description.

12)

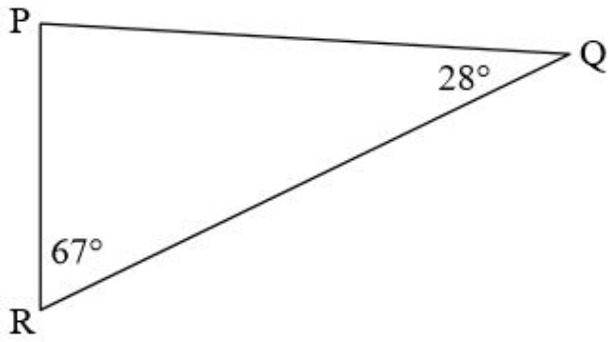


A diagonal support beam is attached to the gate of a fence as shown. Which angles must be congruent in order for the top and bottom sides of the gate to be parallel?

A) $\angle 1$ and $\angle 2$
B) $\angle 3$ and $\angle 4$
C) $\angle 1$ and $\angle 4$
D) $\angle 1$ and $\angle 3$

Explanation:
The solution is **$\angle 1$ and $\angle 4$**. These angles are alternate interior angles formed by the transversal and the top and bottom sides of the gate. Angles *2* and *3* are also alternate interior angles, but they are formed by the transversal and the left and right sides of the gate.

13)



Find the measure of ∠P.

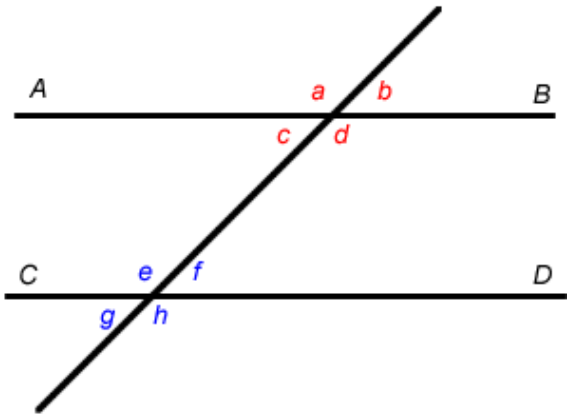
A) 39°
B) 80°
C) 85°
D) 90°

Explanation:
85°

The sum of the three interior angles in a triangle is always 180°.

P + 28 + 67 = 180
P + 95 = 180
P = 85

14)

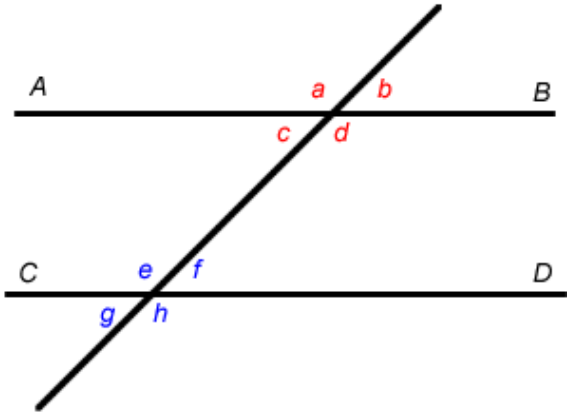


Line AB is parallel to line CD. Which statement is true?

A) Angle d is congruent to angle b.
B) Angle d is congruent to angle c.
C) Angle d is congruent to angle e.
D) Angle d is congruent to angle f.

Explanation:
Angle d is congruent to angle e because alternate interior angles formed by parallel lines and a transversal are equal.

15)

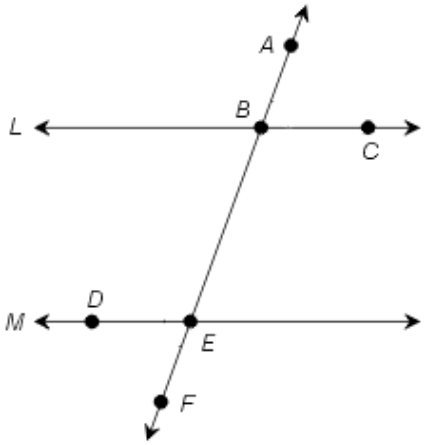


Angle b and Angle g are known as alternate _____ angles.

A) consecutive
B) corresponding
C) exterior
D) interior

Explanation:
Solution: **exterior**. The two angles lie outside the two lines on opposite sides of the transversal.

16)

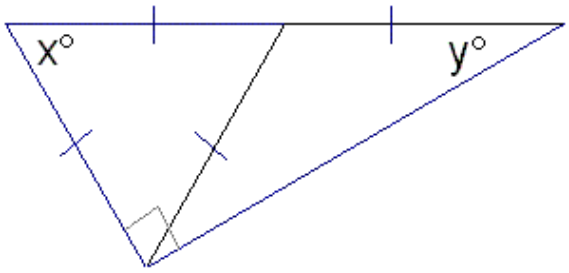


If line L is parallel to line M, what is true about angle ABC and angle DEF?

A) They are obtuse.
B) They are congruent.
C) They are supplementary.
D) They are complementary.

Explanation:
They are congruent because the angles are alternate exterior angles.

17)

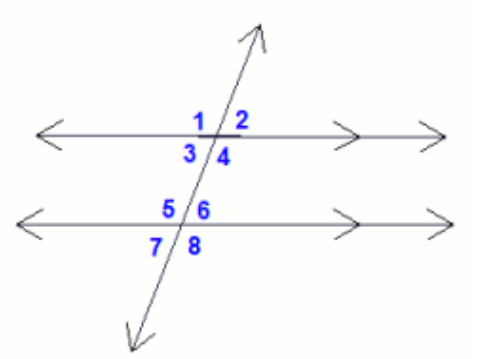


Find x and y in the diagram.

A) x = 60, y = 30
B) x = 45, y = 60
C) x = 30, y = 60
D) x = 60, y = 120

Explanation:
x = 60, y = 30. Since x is part of an equilateral triangle you know that it must be 60. The vertex angle of the isosceles triangle is 120. Therefore, y must equal 30.

18)



Which pair of angles are congruent?

A) 1 and 8
B) 4 and 6
C) 5 and 6
D) 1 and 7

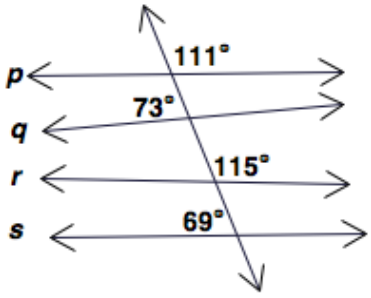
Explanation:
The solution is **1 and 8**. Angles 1 and 8 are alternate exterior angles formed by parallel lines and a transversal. Therefore, these angles are congruent.

19) Δ ABC is isosceles. If m∠A = 100°, m∠B = (12x + 4)°, and m∠C = (14x - 2)°, find x.

A) 1
B) 3
C) 5
D) 7

Explanation:
You did not need to know m∠A to solve this problem. Set 12x + 4 and 14x - 2 equal to each other and solve. The correct answer is x = **3.**

20)

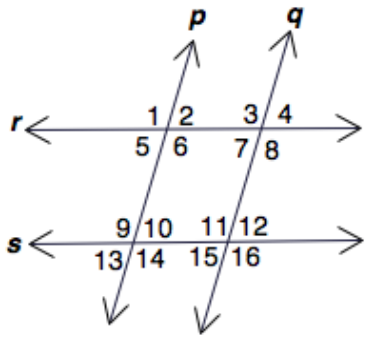


Which lines are parallel?

A) *p* and *q*
B) *q* and *r*
C) *p* and *s*
D) *r* and *s*

Explanation:
The solution is ***p* and *s***. Since 111° and 69° are supplementary we can conclude that lines *p* and *s* are parallel.

21)



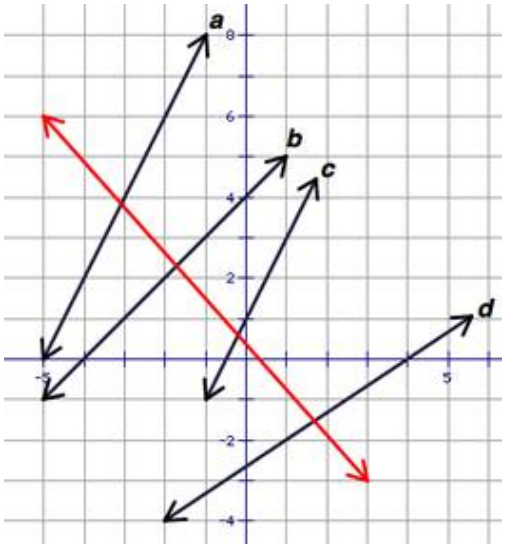
Given: ∠1 ≅ ∠8

Which lines must be parallel?

A) *r* and *s*
B) *p* and *q*
C) *p* and *r*
D) *q* and *s*

Explanation:
The solution is ***p* and *q***. Since angles 1 and 8 are congruent alternate exterior angles and r is the transversal, we can conclude that lines *p* and *q* are parallel.

22)

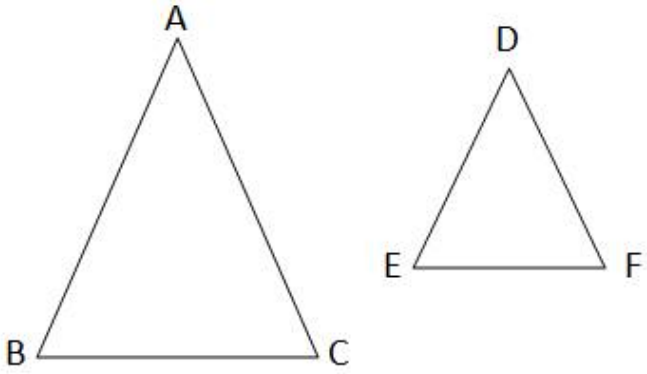


Determine which lines in the diagram are parallel.

A) *a* || *b*
B) *b* || *c*
C) *a* || *c*
D) *b* || *d*

Explanation:
The solution is ***a* || *c***. Lines *a* and *c* both have a slope of 2. Therefore, the lines are parallel.

23)

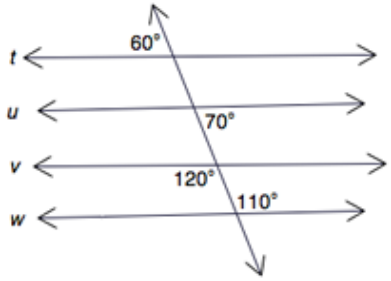


If ΔABC is similar to ΔDEF, the m∠A = 50°, and m∠E = 70°, what is m∠C?

A) 60°
B) 70°
C) 90°
D) 120°

Explanation:
60° is the correct answer.
Since ΔABC is similar to ΔDEF, the m∠E = m∠B = 70°.
We're given that m∠A = 50°.
The sum of the angles in a triangle is 180°,
so m∠C = 180 - 70 - 50 = 60°

24)

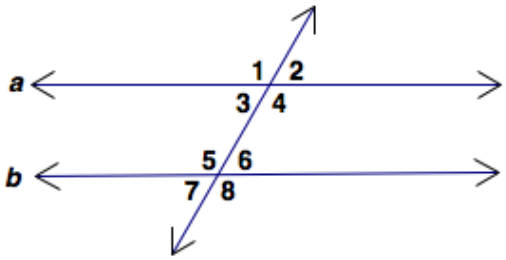


Determine which statement is true.

A) $t \parallel u$ and $v \parallel w$
B) $t \parallel w$ and $u \parallel v$
C) $t \parallel v$ and $u \parallel w$
D) $t \parallel u$ and $u \parallel v$

Explanation:
The solution is ***t* || *v* and *u* || *w***. Since 60° and 120° are supplementary, this allows us to conclude that lines *t* and *v* are parallel. Also, since 70° and 110° are supplementary we can conclude that lines *u* and *w* are parallel.

25)



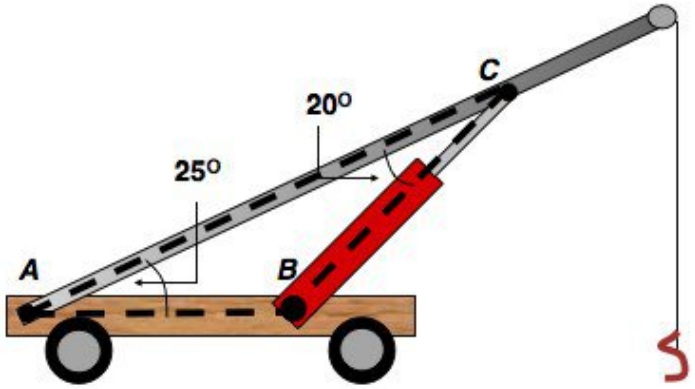
Given: line *a* is parallel to line *b*

Identify a pair of congruent corresponding angles.

A) 1 & 4
B) 1 & 8
C) 2 & 5
D) 4 & 8

Explanation:
Angles **4 & 8** are congruent corresponding angles. These angles occupy corresponding positions on the same side of the transversal. Since the lines are parallel, we can conclude that these angles are congruent.

26)



Greg and Lu are building a toy hydraulic crane, as shown in the picture.

What is m∠ABC?

A) 100°
B) 115°
C) 120°
D) 135°

Explanation:
135°

The sum of the angles of any triangle is 180°.

In ΔABC, 20° + 25° + ∠ABC = 180°

→ ∠ABC = 180° - 20° - 25° = 135°

27)

A carpenter designs an A-frame chalkboard. Its support bars form the legs of an isosceles triangle.

If the measure of base angle ABC is 75°, what is m∠BAC?

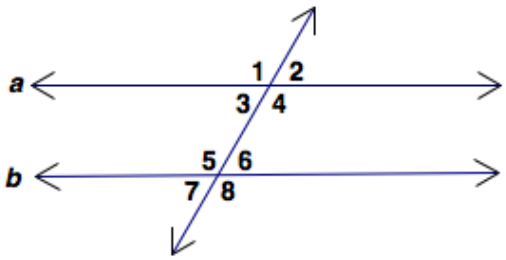
A) 15°
B) 30°
C) 75°
D) 105°

Explanation:
The base angles of an isosceles triangle are equal, so m∠ACB = 75°.

The sum of the angles of any triangle is 180°.
75° + 75° + m∠BAC = 180°

m∠BAC = 180° - (75° + 75°) = **30°**

28)

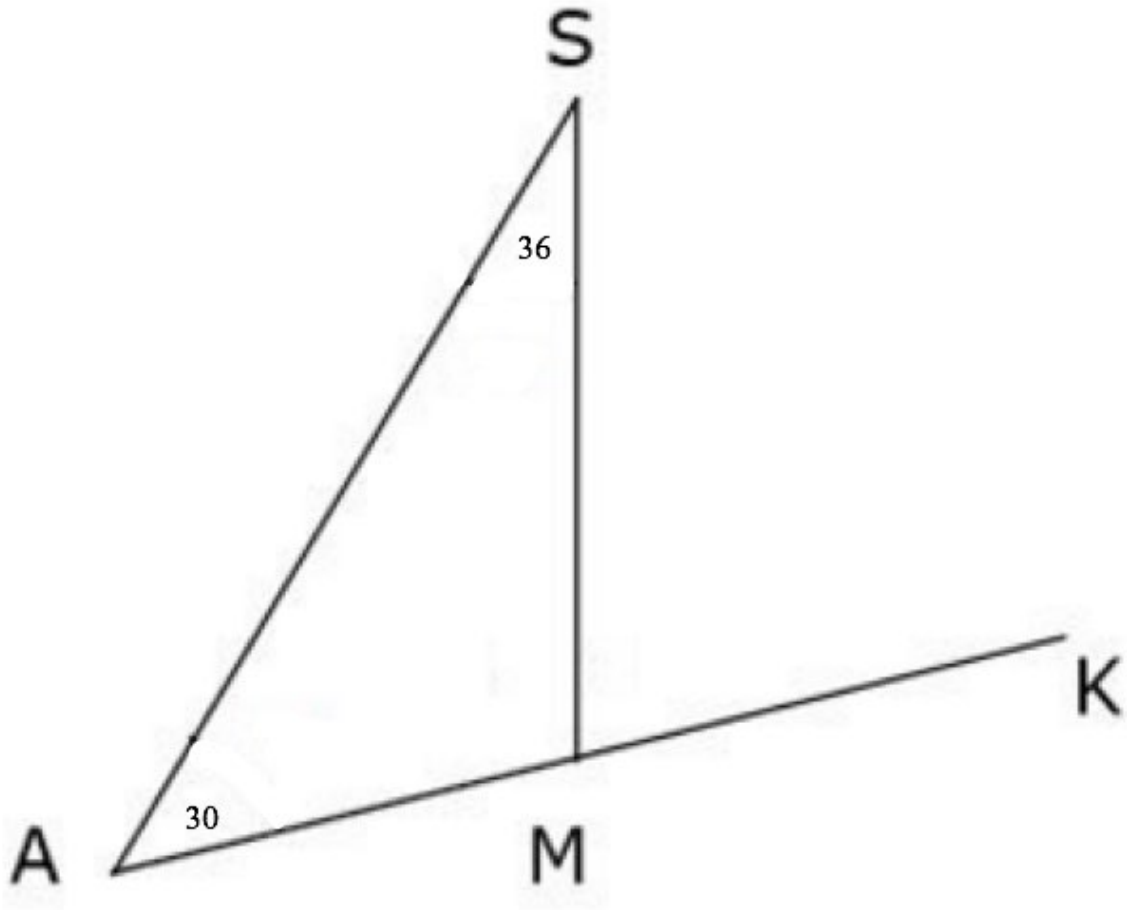


Given that lines a and b are parallel and that m∠6 = 65°, find m∠3.

A) 40°
B) 65°
C) 115°
D) 135°

Explanation:
65° is correct. m∠6 and m∠3 are alternate interior angles. The pairs of angles on opposite sides of the transversal but inside the two lines are alternate interior angles. Alternate interior angles of parallel lines cut by a transversal are congruent.

29)



Find the measure of ∠SMK.

A) 36°
B) 48°
C) 56°
D) 66°

Explanation:
66

Exterior angles of a triangle supplementary angles (equal 180°).

and,

The sum of the three interior angles in a triangle is always 180°.

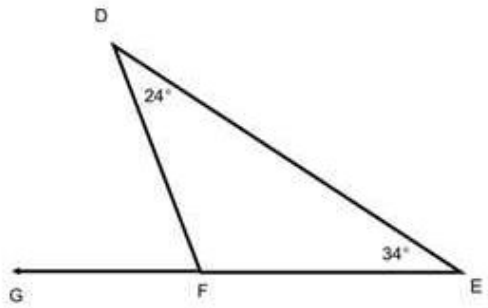
x + 30 + 36 = 180
x + 66 = 180
x = 114

then,

180 - 114 = 66

Also, the exterior angle is equal to the sum of the two remote interior angles.
30 + 36 = 66

30)



Find the measure of ∠DFG.

A) 24°
B) 34°
C) 58°
D) 62°

Explanation:
58°

Exterior angles of a triangle supplementary angles (equal 180°).

and,

The sum of the three interior angles in a triangle is always 180°.

x + 24 + 34 = 180
x + 58 = 180
x = 122

then,

180 - 122 = 58

Also, the exterior angle is equal to the sum of the two remote interior angles.
24 + 34 = 58