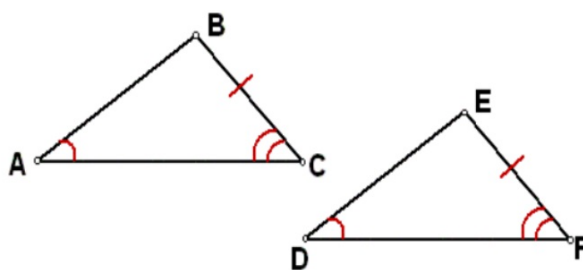**#1**



Using only the markings in the diagram, what theorem can be used to prove that the triangles are congruent?

es 🔊

Using only the markings in the diagram, what theorem can be used to prove that the triangles are congruent?

A)  AAA

B)  AAS

C)  SAS

D)  SSS

## #2

Rectangle EFGH has the coordinates

E (-3, -1)
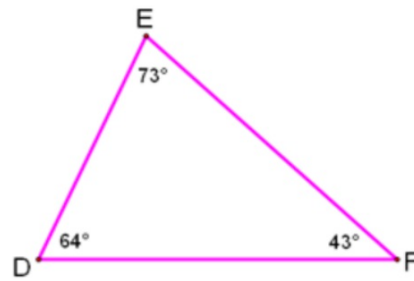F (-3, 3)
G (-1, 3)

## Find the coordinates of point H.

A)     (-1, 0)
B)     (-1, 1)
C)     (1, -1)
D)     (-1, -1)

**#3**



Determine the shortest side in ΔDEF.

- A) $\overline{EF}$
- B) $\overline{DE}$
- C) $\overline{FE}$
- D) $\overline{DF}$

## #4

Write an equation of the line that is perpendicular to the line y = 4x - 10 that passes through the point (-16, 2).

es 🔊

A) $y = -\dfrac{1}{4}x - 2$

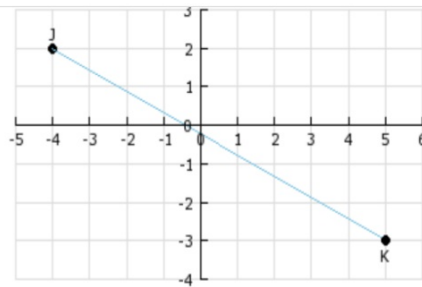B) $y = -4x + 6$

C) $y = -\dfrac{1}{4}x + 2$

D) $y = 4x + 2$

## #5

On a coordinate grid, the movie theater is located at (0,0) and the mall is located at (4,3). If the bowling alley is located at the midpoint between the theater and the mall, what is the approximate distance from the bowling alley to the mall? (Note: 1 unit equals 1 mile)

es ◀))

A)    1.3 miles
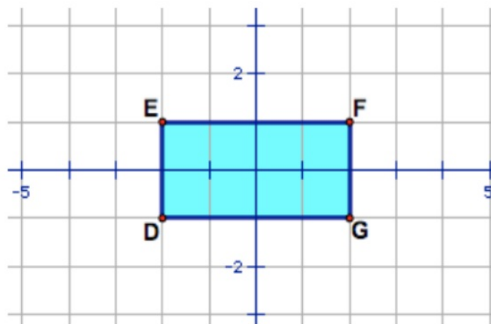
B)    1.5 miles

C)    2 miles

D)    2.5 miles

**#6**



$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

What is the length of line segment $\overline{JK}$?

A) $\sqrt{106}$

B) $\sqrt{13}$

C) $\sqrt{19}$

D) $\sqrt{67}$

**#7**



rectangle DEFG is dilated by a scale factor of 3 with a dilation center of (0, 0), what will be the coordinates of point D'

A)   (-6, 0)
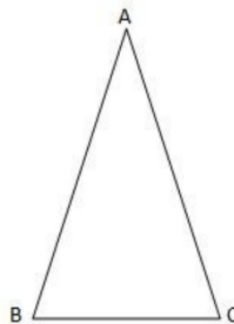
B)   (3, -2)

C)   (-6, -3)

D)   (-6, -2)

#8

Find the point, M, that divides segment AB into a ratio of 2:3 if A is at (0, 15) and B is at (20, 0).

es ◀))

A)    (8, 9)
B)    (9, 9)
C)    (9, 12)
D)    (8, 12)

#9



ΔABC is an isosceles triangle in which angles B and C are congruent. If m∠B = (2x + 16)° and m∠C = (3x - 11)°, find the measure of angle A.

    A)   27°
    B)   40°
    C)   60°
    D)   70°

*#10*

ΔABC is an equilateral triangle. m∠A = (3x - 12)°. Solve for x.

es ◄))

A)    14

B)    19

C)    20

D)    24

# #11

Find the equation of a line that is parallel to y = 2x + 3 and passes through (-1, -1).

es 🔊

A)    y = 2x + 1

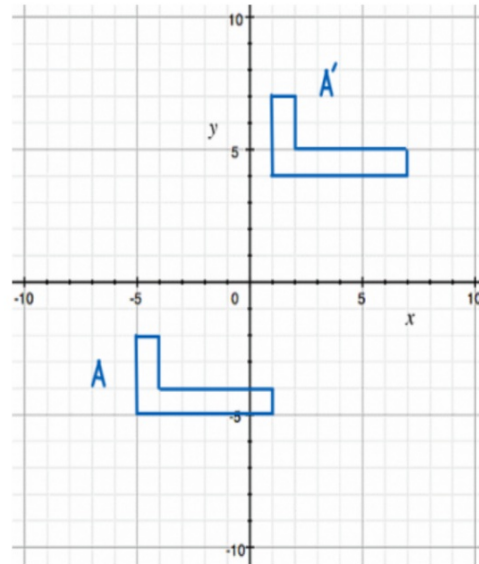B)    y = 2x + 3

C)    y = 4x + 3

D)    y = 4x + 5

**#12**

Which BEST describes a ray?

A)    Arrow at both ends.

B)    Endpoint at both ends.

C)    No endpoint or arrow on the ends.

D)    Endpoint at one end and an arrow at the other end.

#13



Describe the transformation that maps the pre-image A to the image A'.
- A) translated 9 units up and then reflected across the y-axis
- B) translated 6 units to right and then translated 9 units up
- C) translated 9 units to right and then translated 6 units up
- D) translated 6 units to the right and then reflected across the x-axis

#14
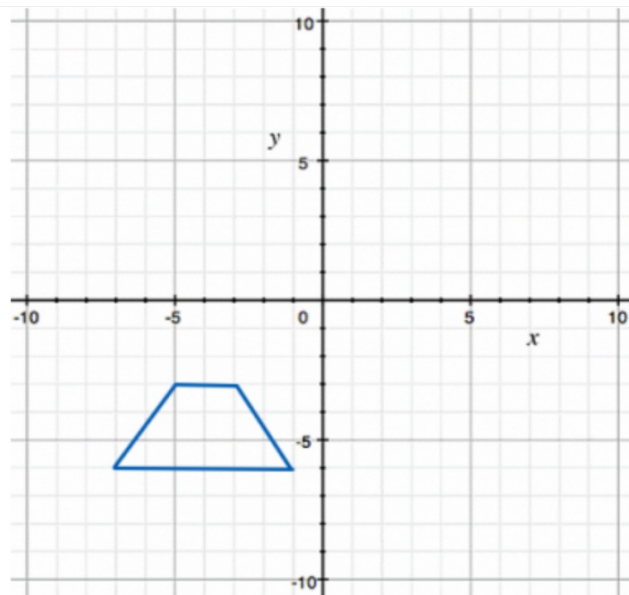


Identify the transformation that maps the figure onto itself.

- A) rotate 360° clockwise about (-4, -3) and reflect across the line y = -6
- B) rotate 360° clockwise about (-4, -3) and reflect across the line x = -4
- C) rotate 180° clockwise about (-1, -6) and reflect across the line y = -6
- D) rotate 180° clockwise about (-1, -6) and reflect across the line x = -4

**#15**
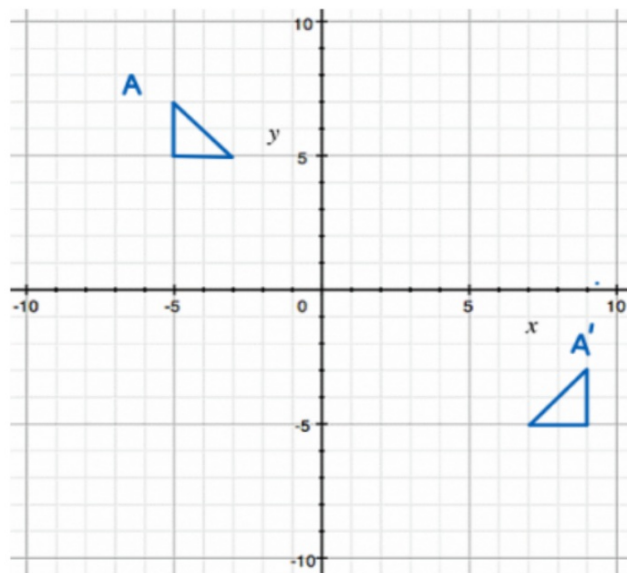


Select the sequence of transformations that will carry triangle A onto triangle A'.
- A) reflect over x-axis, then 12 units right
- B) translate 12 units right, then reflect over x-axis
- C) rotate 90° clockwise, reflect over x-axis, then translate 12 units right
- D) reflect over y-axis, translate 4 units right, then translate 10 units down

*#16*

By the Triangle Inequality Theorem which set of side lengths could create a triangle?

es ◀))

A)      4, 8, 2

B)      5, 9, 6

C)      6, 8, 16

D)      10, 4, 3

# #17

Jon performs 3 transformations on a pentagon. First, he reflects it over the x-axis. Then, he translates it 3 units to the left and 4 units up. Finally, he reflects the image over the line x = 1. Are the original and transformed images congruent? Justify your answer.

es ◀))

A)   no; Two reflections will change the size of the original image.

B)   no; Reflections and translations are fluid motions. Fluid motions change the size of the original image.

C)   yes; Reflections and translations are rigid motions. Rigid motions preserve the size of the original image

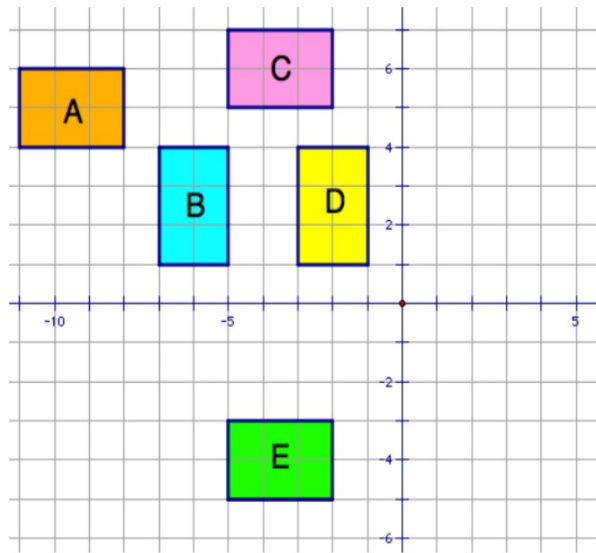D)   yes; Reflections and translations are fluid motions. Fluid motions preserve the size of the original image

# #18
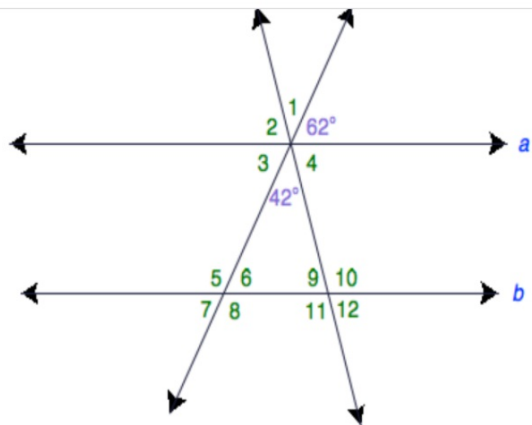


Consider that lines *a* and *b* are parallel. What is the measurement of ∠12?

A)  42 degrees
B)  62 degrees
C)  76 degrees
D)  104 degrees

#1⁹



Which rectangle if reflected across the x-axis and then translated 1 unit up and 6 units right will result in rectangle E?

A)  Rectangle A

B)  Rectangle B

C)  Rectangle C

D)  Rectangle D

## #20

Find the area of the triangle defined by the coordinates (7, 1), (0, 10), and (9, 4). (To the nearest tenth)

es ◀))

A)  12.5 square units
B)  17.5 square units
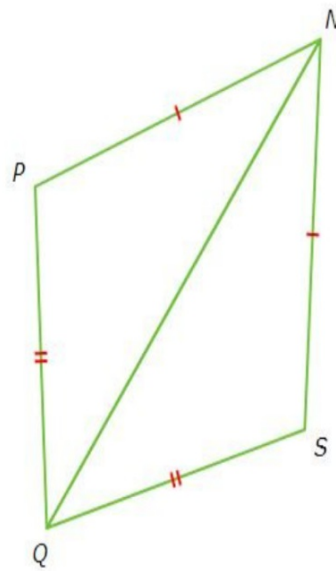C)  19.5 square units
D)  22.5 square units
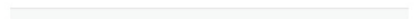
#21

Points that lie on the same line are said to be

es ◀))

A)    collinear.

B)    finite.
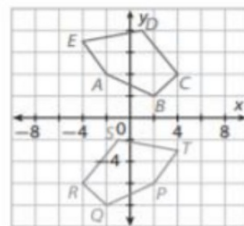
C)    horizontal.

D)    ordered.

#22



By which rule are these triangles congruent?
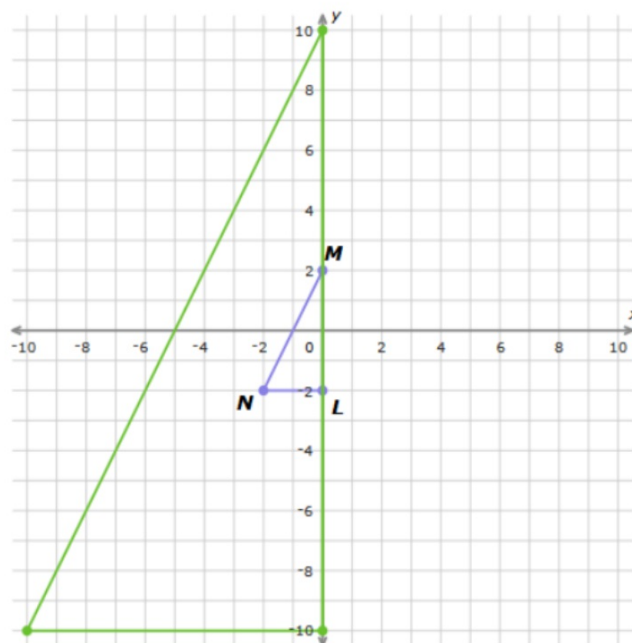  A)    AAS
  B)    ASA
  C)    SAS
  D)    SSS

#23



Identify the sequence of transformations that maps ABCDE to PQRST.
   A)    reflection across x-axis, and then translation (x − 10, y)
   B)    reflection across x-axis, and then translation (x, y − 10)
   C)    reflection across y-axis, and then translation (x − 10, y)
   D)    reflection across y-axis, and then translation (x, y − 10)

**#24**



Triangle MNL undergoes a dilation centered at the origin. The result is the green triangle. Which rule describes the dilation?

A)  $(x, y) \rightarrow (5x, 5y)$

B)  $(x, y) \rightarrow (3x, 3y)$

C)  $(x, y) \rightarrow (\frac{1}{5}x, \frac{1}{5}y)$

D)  $(x, y) \rightarrow (-5x, -5y)$

Find m∠FGL.

m∠FGH = 165°
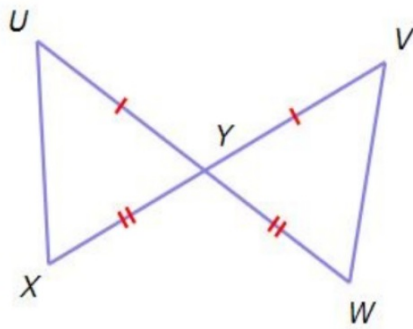m∠FGL = (x + 15)°
and m∠LGH = (9x)°

    A)     20°
    B)     25°
    C)     30°
    D)     35°

#26



| | Statement | Reason |
|---|---|---|
| 1 | $\overline{XY} \cong \overline{WY}$ | Given |
| 2 | $\overline{VY} \cong \overline{UY}$ | Given |
| 3 | $\angle UYX \cong \angle VYW$ | Vertical Angle Theorem |
| 4 | $\triangle VWY \cong \triangle UXY$ | |

Complete the proof.

Prove: $\triangle VWY \cong \triangle UXY$
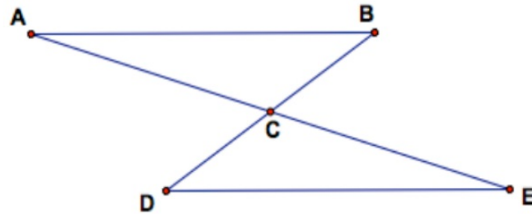- A)     AAS
- B)     ASA
- C)     HL
- D)     SAS

# #27

A sequence of transformations which moves ΔRST onto ΔXYZ shows that ΔRST ≅ ΔXYZ. Which part of the triangles are congruent by CPCTC?

es ◀))

A) ∠X ≅ ∠S

B) ∠R ≅ ∠Y

C) ∠T ≅ ∠Z

D) ∠Y ≅ ∠T

#28



Proof

| Statements | Reasons |
| --- | --- |
| segment AB ∥ segment DE | given |
| C is the midpoint of DB | given |
| segment DC ≅ segment BC | |
| ∠DCE ≅ ∠BCA | Vertical Angles are Congruent |
| ∠A ≅ ∠E | alternate interior angles formed by ∥ lines and a transversal are ≅ |
| ΔACB ≅ ΔECD | Angle-Side-Angle (ASA) |

Given: segment AB ∥ segment DE, C is the midpoint of segment DB.
Prove: ΔACB ≅ ΔECD

Fill in the missing reason for the proof.
  A)    definition of midpoint
  B)    vertical angles are congruent
  C)    all right angles are congruent
  D)    supplementary angles are congruent

**#29**
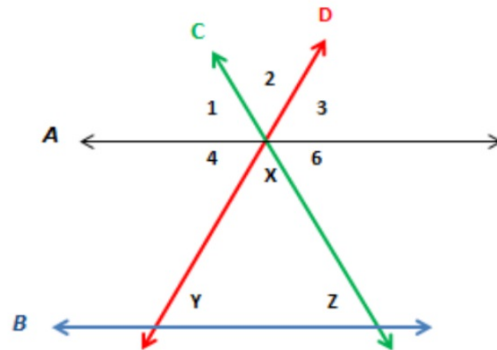


Given:  *Lines A and B* are parallel and Lines C and D are transversals.

Prove:  $\angle X + \angle Y + \angle Z = 180°$

| Statement | Reason |
|---|---|
| 1. Lines A and B are parallel;<br>    Lines C and D are transversals. | 1. ? |
| 2. $\angle Y \cong \angle 4$ | 2. ? |
| 3. $\angle Z \cong \angle 6$ | 3. ? |
| 4. $\angle X + \angle 4 + \angle 6 = 180°$ | 4. ? |
| 5. $\angle X + \angle Y + \angle Z = 180°$ | 5. ? |

Which reason justifies Statement 3?

   A)   Vertical angles are congruent.

   B)   Corresponding angles are congruent.

   C)   Alternate interior angles are congruent.

   D)   Alternate exterior angles are congruent.