H Geometry Qtr 1 Cumulative Practice

Compiled from some old
NY Regents Common Core Exams

8 Point A is not contained in plane B. How many lines can be drawn through point A that will be perpendicular to plane B?

(1) one

(3) zero

(2) two

(4) infinite

26 Which statement is logically equivalent to "If it is warm, then I go swimming"?

(1) If I go swimming, then it is warm.

(2) If it is warm, then I do not go swimming.

(3) If I do not go swimming, then it is not warm.

(4) If it is not warm, then I do not go swimming.

13 What is the length of the line segment with endpoints $A(-6,4)$ and $B(2,-5)$?

  (1) $\sqrt{13}$ (3) $\sqrt{72}$

  (2) $\sqrt{17}$ (4) $\sqrt{145}$

14 The lines represented by the equations $y + \frac{1}{2}x = 4$ and $3x + 6y = 12$ are

  (1) the same line

  (2) parallel

  (3) perpendicular

  (4) neither parallel nor perpendicular

19 If a line segment has endpoints $A(3x + 5, 3y)$ and $B(x - 1, -y)$, what are the coordinates of the midpoint of $\overline{AB}$?

  (1) $(x + 3, 2y)$ (3) $(2x + 3, y)$

  (2) $(2x + 2, y)$ (4) $(4x + 4, 2y)$

9 Which equation represents a line that is perpendicular to the line represented by $2x - y = 7$?

(1) $y = -\frac{1}{2}x + 6$ (3) $y = -2x + 6$

(2) $y = \frac{1}{2}x + 6$ (4) $y = 2x + 6$

10 What is an equation of the line that passes through the point (7,3) and is parallel to the line $4x + 2y = 10$?

(1) $y = \frac{1}{2}x - \frac{1}{2}$ (3) $y = 2x - 11$

(2) $y = -\frac{1}{2}x + \frac{13}{2}$ (4) $y = -2x + 17$

24 What is the slope of a line perpendicular to the line whose equation is $2y = -6x + 8$?

(1) -3 (3) $\frac{1}{3}$
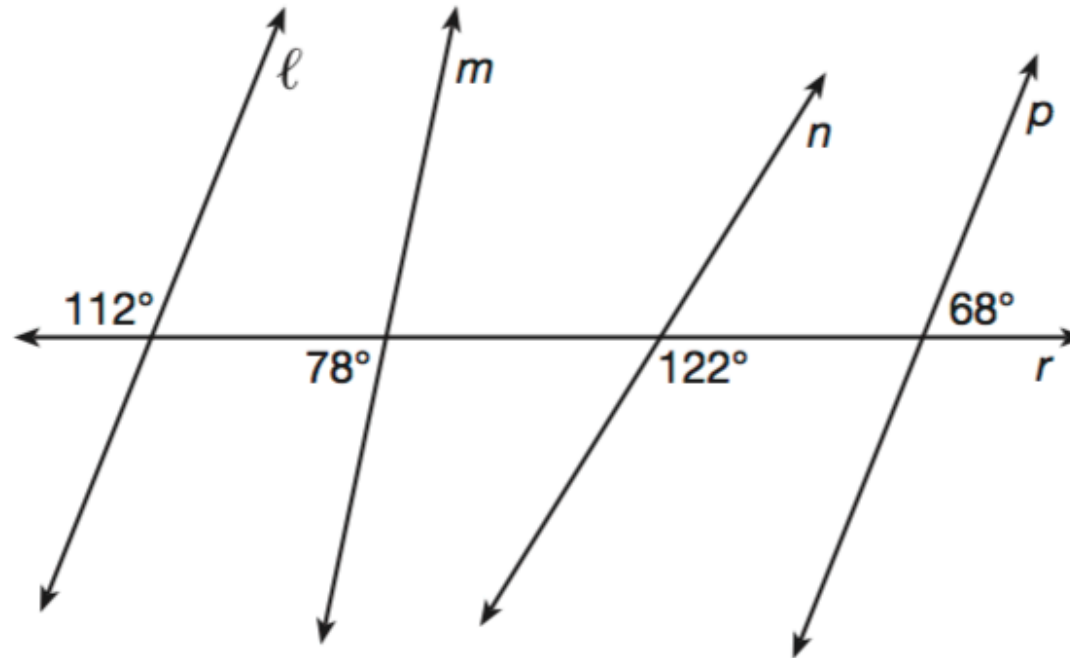
(2) $\frac{1}{6}$ (4) -6

Parallel Lines

26 The diagram below shows parallelogram *LMNO* with diagonal $\overline{LN}$, m∠*M* = 118°, and m∠*LNO* = 22°.

L
M
118°
22°
O
N
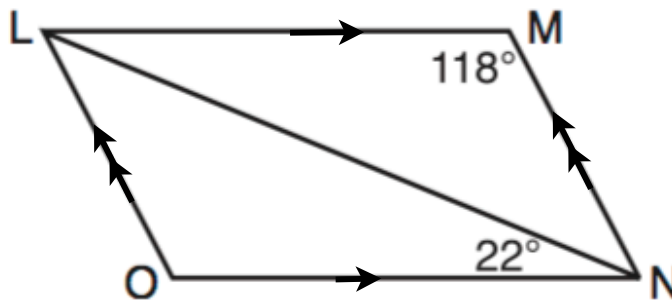
Explain why m∠*NLO* is 40 degrees.

1 In the diagram below, lines ℓ, m, n, and p intersect line r.
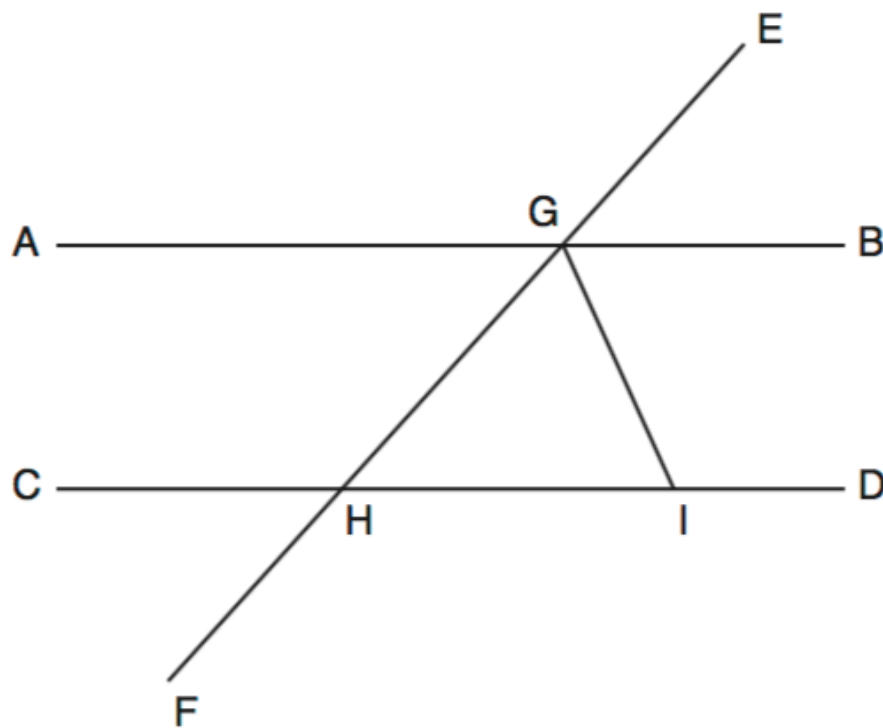

Which statement is true?

(1) $\ell \parallel n$
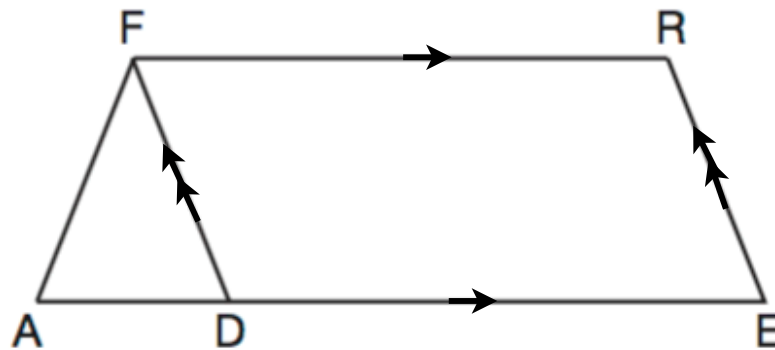
(2) $\ell \parallel p$

(3) $m \parallel p$

(4) $m \parallel n$

32 In the diagram below, $\overline{EF}$ intersects $\overline{AB}$ and $\overline{CD}$ at G and H, respectively, and $\overline{GI}$ is drawn such that $\overline{GH} \cong \overline{IH}$.

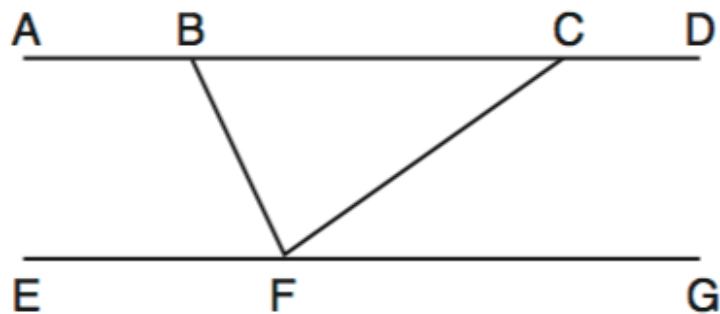If m$\angle EGB = 50°$ and m$\angle DIG = 115°$, explain why $\overline{AB} \parallel \overline{CD}$.

8 In the diagram of parallelogram *FRED* shown below, $\overline{ED}$ is extended to *A*, and $\overline{AF}$ is drawn such that $\overline{AF} \cong \overline{DF}$.

If m∠*R* = 124°, what is m∠*AFD*?

(1) 124°

(2) 112°

(3) 68°

(4) 56°

17 Steve drew line segments $ABCD$, EFG, BF, and CF as shown in the diagram below. Scalene $\triangle BFC$ is formed.

Which statement will allow Steve to prove $\overline{ABCD} \parallel \overline{EFG}$?
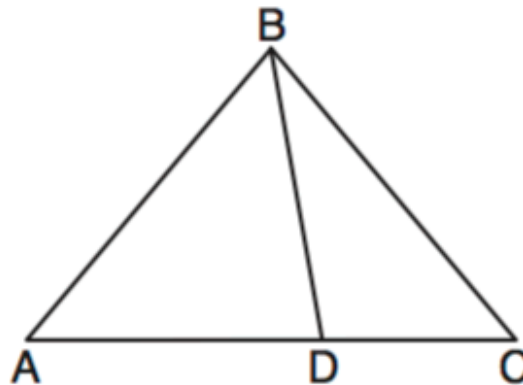
(1) $\angle CFG \cong \angle FCB$ (3) $\angle EFB \cong \angle CFB$

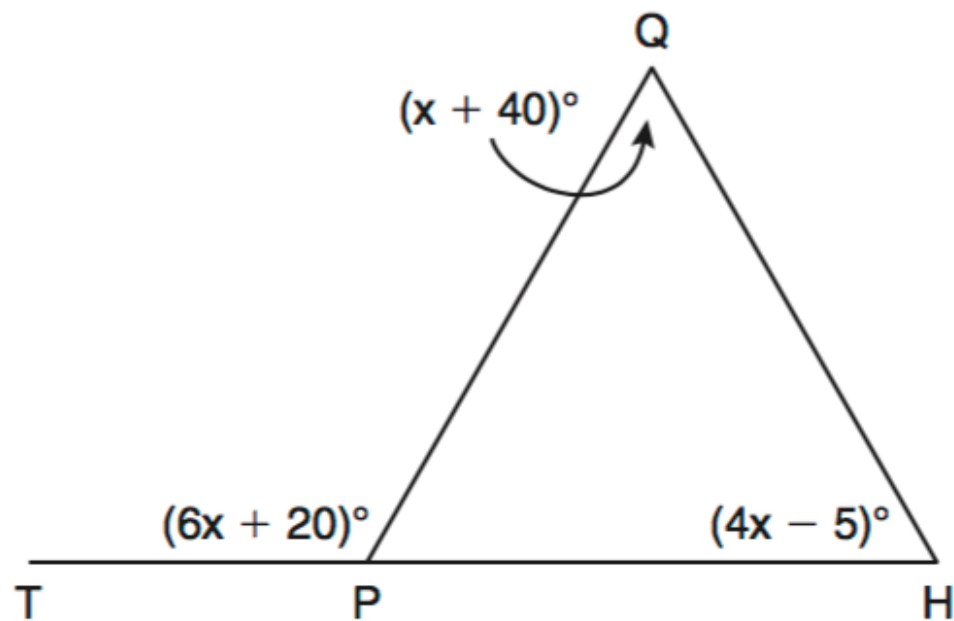(2) $\angle ABF \cong \angle BFC$ (4) $\angle CBF \cong \angle GFC$

Triangles

4 In the diagram below, m∠BDC = 100°, m∠A = 50°, and m∠DBC = 30°.

Which statement is true?

(1) △ABD is obtuse.

(2) △ABC is isosceles.

(3) m∠ABD = 80°

(4) △ABD is scalene.

31 In the diagram below of $\triangle HQP$, side $\overline{HP}$ is extended through P to T, $m\angle QPT = 6x + 20$, $m\angle HQP = x + 40$, and $m\angle PHQ = 4x - 5$. Find $m\angle QPT$.

Q

$(x + 40)°$

$(6x + 20)°$

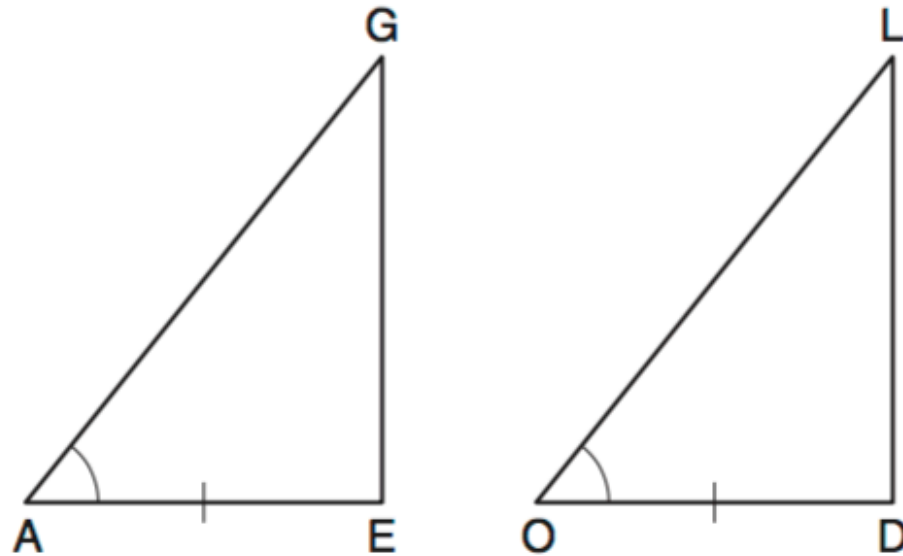$(4x - 5)°$

T   P   H

(Not drawn to scale)

24 Which statement is sufficient evidence that $\triangle DEF$ is congruent to $\triangle ABC$?
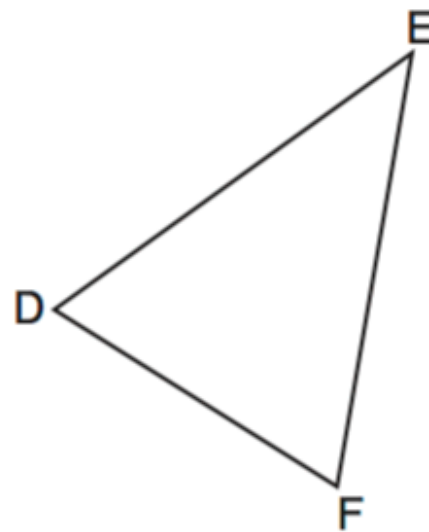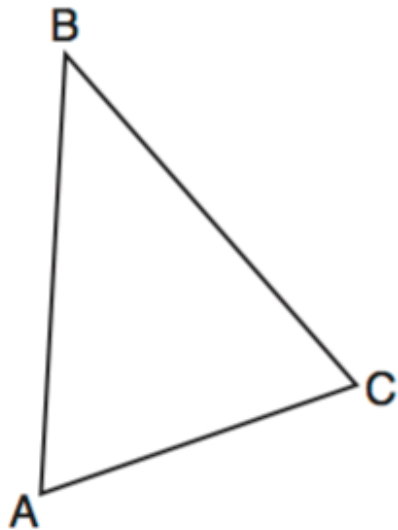
(1) $AB = DE$ and $BC = EF$

(2) $\angle D \cong \angle A,\ \angle B \cong \angle E,\ \angle C \cong \angle F$

(3) There is a sequence of rigid motions that maps $\overline{AB}$ onto $\overline{DE}$, $\overline{BC}$ onto $\overline{EF}$, and $\overline{AC}$ onto $\overline{DF}$.

(4) There is a sequence of rigid motions that maps point A onto point D, $\overline{AB}$ onto $\overline{DE}$, and $\angle B$ onto $\angle E$.
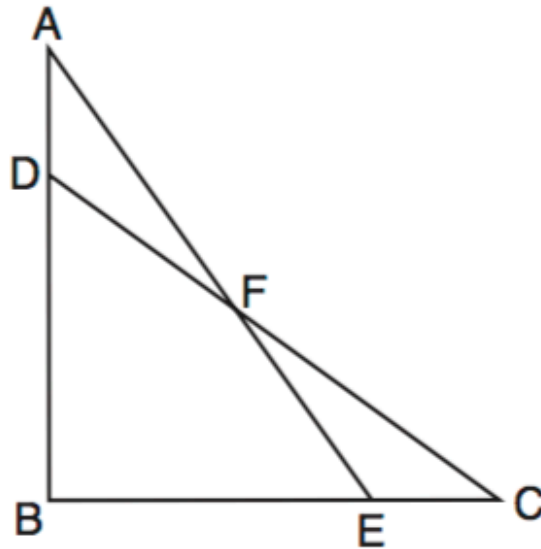
7 In the diagram below of $\triangle AGE$ and $\triangle OLD$, $\angle GAE \cong \angle LOD$, and $\overline{AE} \cong \overline{OD}$.

To prove that $\triangle AGE$ and $\triangle OLD$ are congruent by SAS, what other information is needed?

(1) $\overline{GE} \cong \overline{LD}$

(2) $\overline{AG} \cong \overline{OL}$

(3) $\angle AGE \cong \angle OLD$
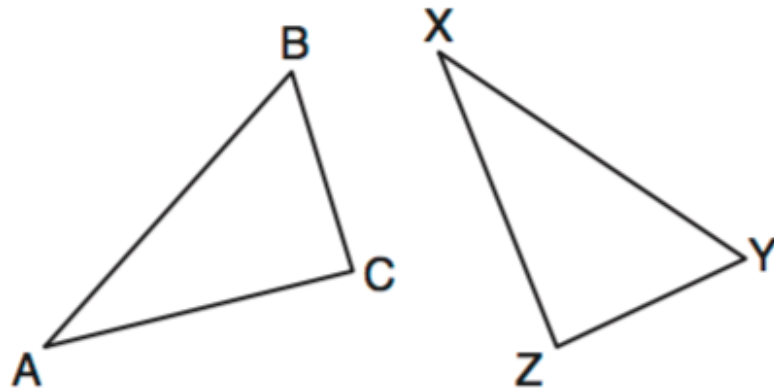
(4) $\angle AEG \cong \angle ODL$

22 Given: $\triangle ABE$ and $\triangle CBD$ shown in the diagram below with $\overline{DB} \cong \overline{BE}$

Which statement is needed to prove $\triangle ABE \cong \triangle CBD$ using only SAS $\cong$ SAS?

(1) $\angle CDB \cong \angle AEB$ (3) $\overline{AD} \cong \overline{CE}$

(2) $\angle AFD \cong \angle EFC$ (4) $\overline{AE} \cong \overline{CD}$

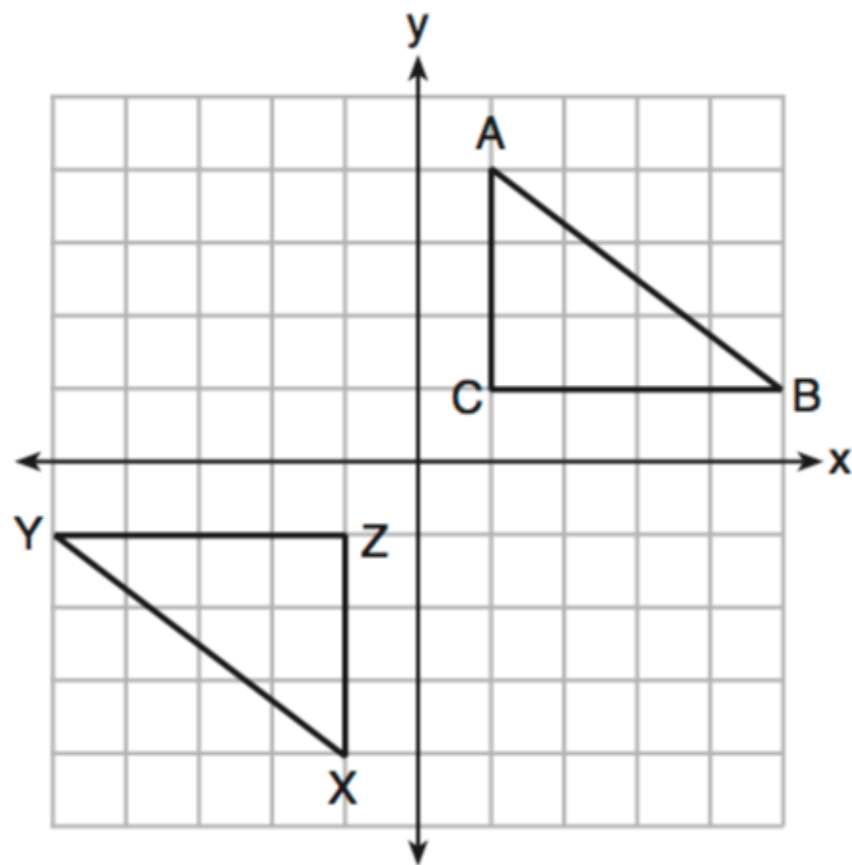**1** In the diagram below, $\triangle ABC \cong \triangle XYZ$.

Which two statements identify corresponding congruent parts for these triangles?

(1) $\overline{AB} \cong \overline{XY}$ and $\angle C \cong \angle Y$

(2) $\overline{AB} \cong \overline{YZ}$ and $\angle C \cong \angle X$

(3) $\overline{BC} \cong \overline{XY}$ and $\angle A \cong \angle Y$

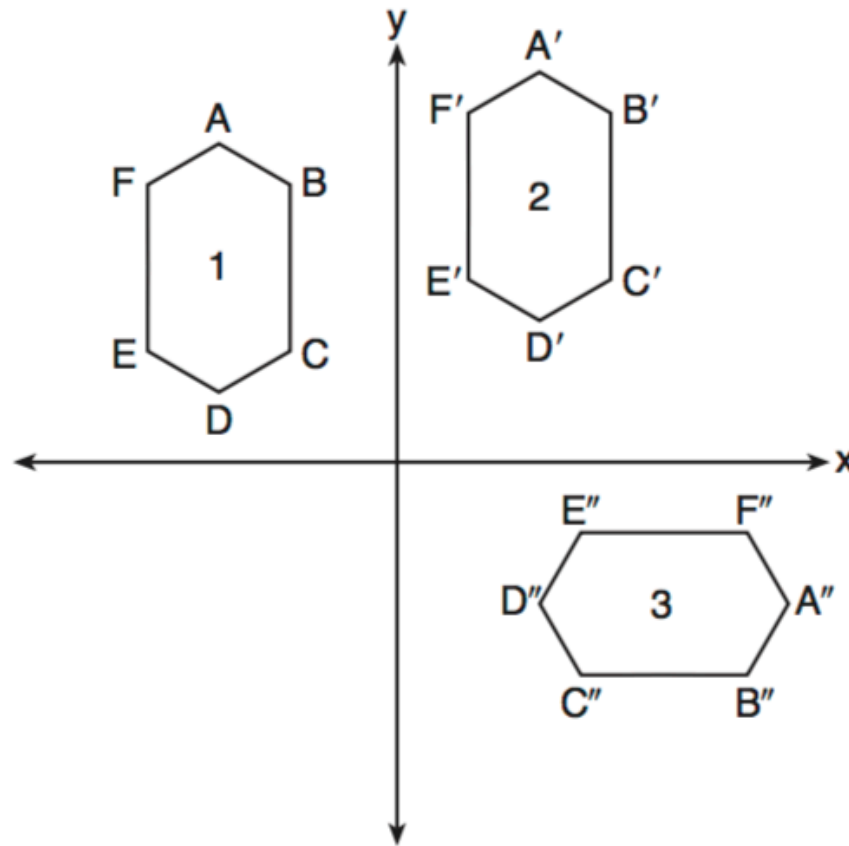(4) $\overline{BC} \cong \overline{YZ}$ and $\angle A \cong \angle X$

Transformations

30 In the diagram below, $\triangle ABC$ and $\triangle XYZ$ are graphed.

Use the properties of rigid motions to explain why $\triangle ABC \cong \triangle XYZ$.

4 In the diagram below, congruent figures 1, 2, and 3 are drawn.

Which sequence of transformations maps figure 1 onto figure 2 and then figure 2 onto figure 3?

(1) a reflection followed by a translation

(2) a rotation followed by a translation

(3) a translation followed by a reflection

(4) a translation followed by a rotation

13 In the diagram below, which single transformation was used to map triangle A onto triangle B?
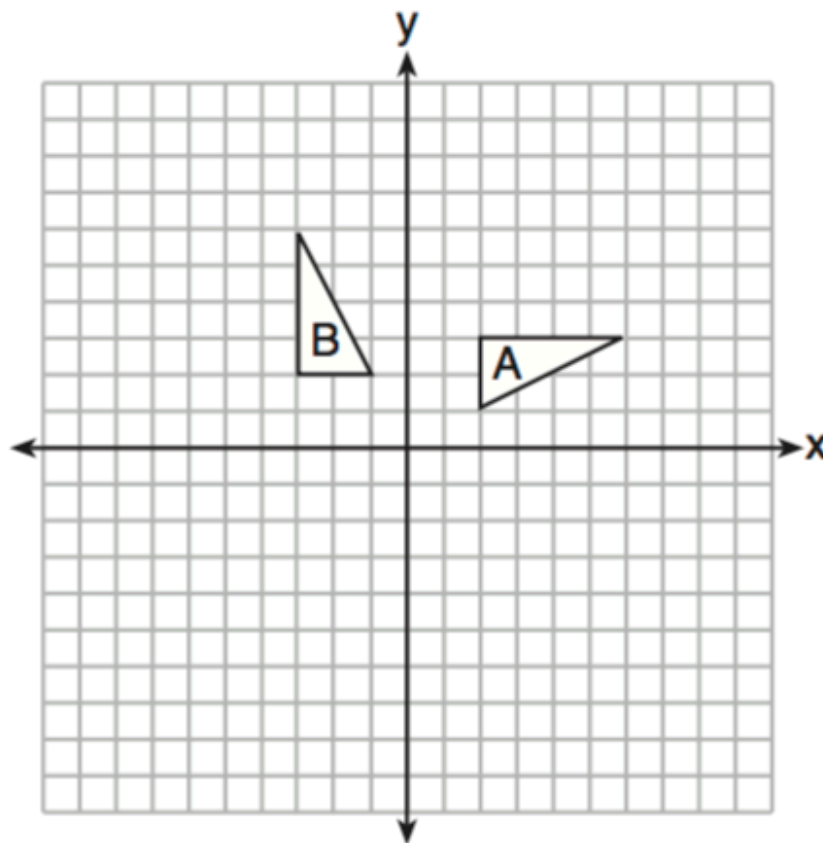
(1) line reflection   (3) dilation

(2) rotation   (4) translation

2 If $\triangle A'B'C'$ is the image of $\triangle ABC$, under which transformation will the triangles *not* be congruent?

(1) reflection over the x-axis

(2) translation to the left 5 and down 4

(3) dilation centered at the origin with scale factor 2

(4) rotation of 270° counterclockwise about the origin

30 After a reflection over a line, $\triangle A'B'C'$ is the image of $\triangle ABC$. Explain why triangle ABC is congruent to triangle $A'B'C'$.

5 In the diagram below, a square is graphed in the coordinate plane.
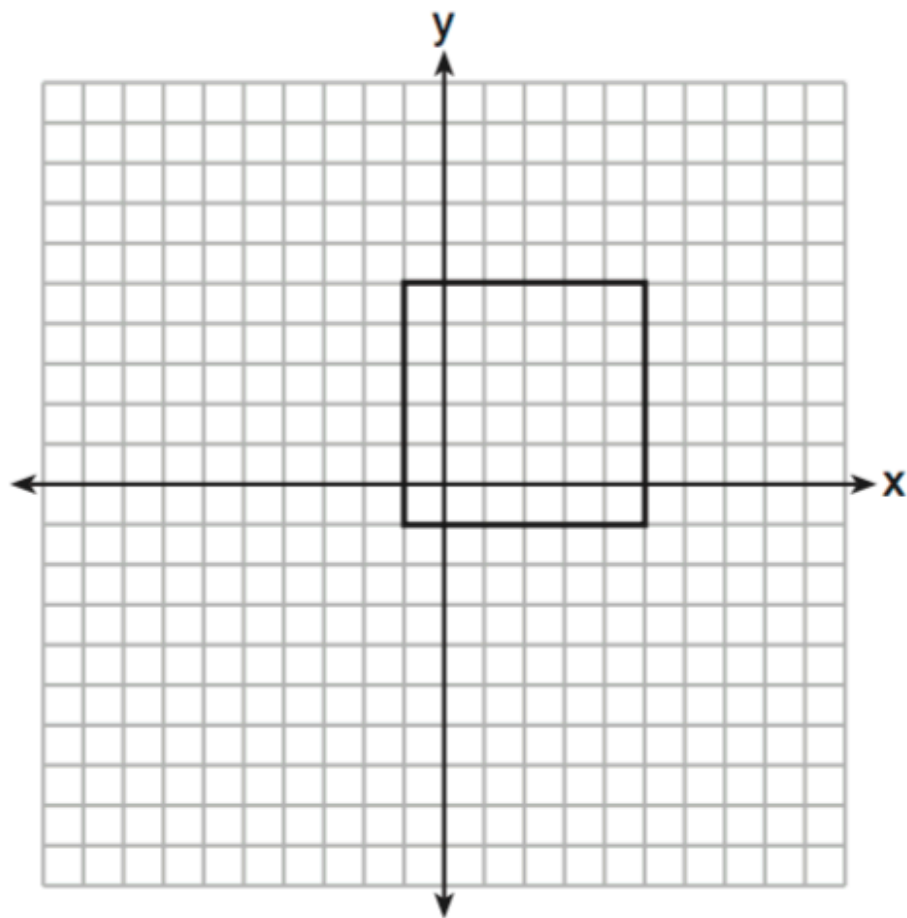
A reflection over which line does *not* carry the square onto itself?
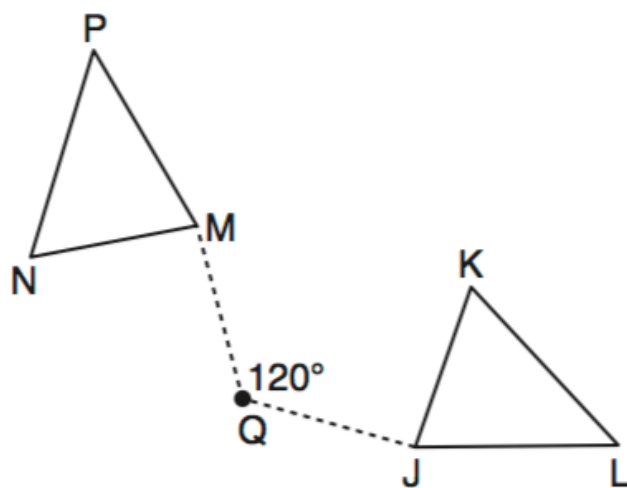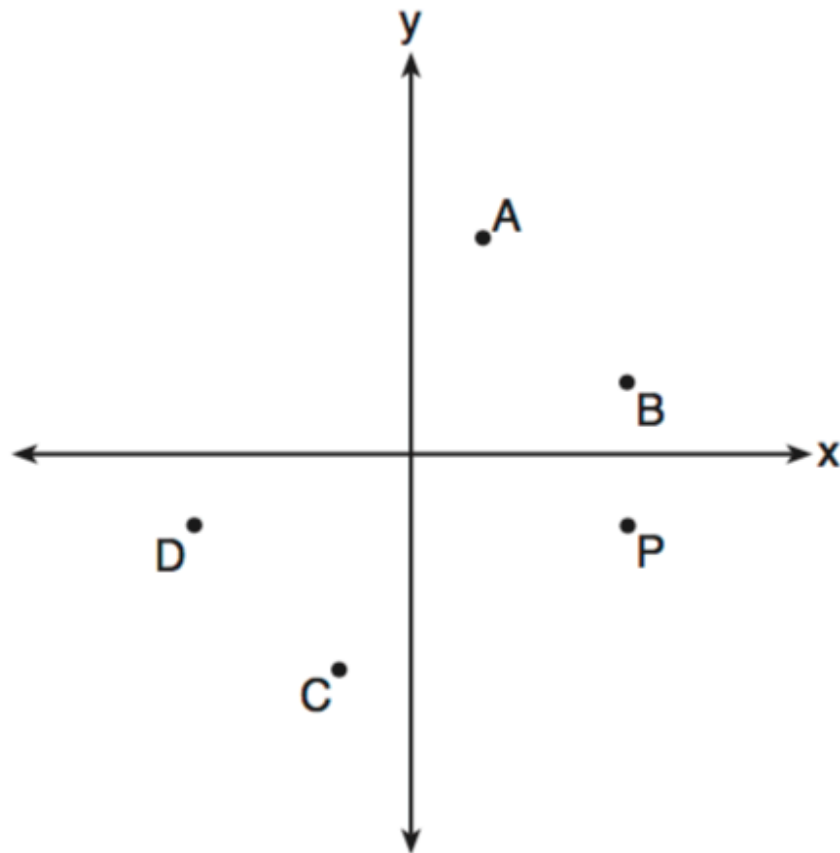
(1) $x = 5$ (3) $y = x$

(2) $y = 2$ (4) $x + y = 4$

29 Triangle *MNP* is the image of triangle *JKL* after a 120° counterclockwise rotation about point *Q*. If the measure of angle *L* is 47° and the measure of angle *N* is 57°, determine the measure of angle *M*. Explain how you arrived at your answer.

5 Which point shown in the graph below is the image of point *P* after a counterclockwise rotation of 90° about the origin?
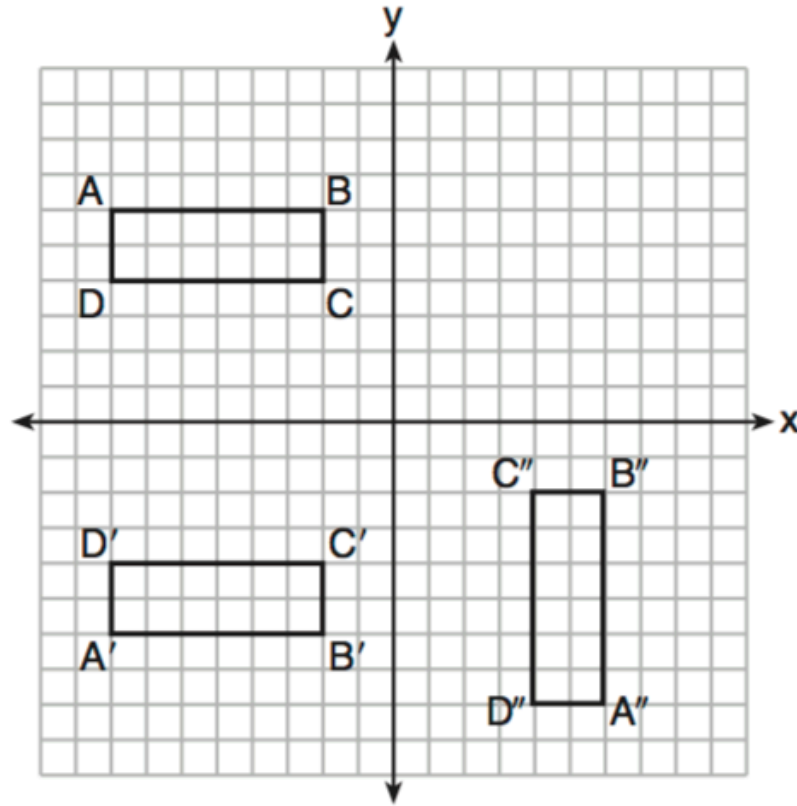

(1) *A*

(2) *B*

(3) *C*

(4) *D*

7 A sequence of transformations maps rectangle *ABCD* onto rectangle *A″B″C″D″*, as shown in the diagram below.

Which sequence of transformations maps *ABCD* onto *A′B′C′D′* and then maps *A′B′C′D′* onto *A″B″C″D″*?

(1) a reflection followed by a rotation

(2) a reflection followed by a translation

(3) a translation followed by a rotation

(4) a translation followed by a reflection

Constructions

5 One step in a construction uses the endpoints of $\overline{AB}$ to create arcs with the same radii. The arcs intersect above and below the segment. What is the relationship of $\overline{AB}$ and the line connecting the points of intersection of these arcs?

(1) collinear

(2) congruent

(3) parallel

(4) perpendicular

26 Construct an equilateral triangle inscribed in circle T shown below.

[Leave all construction marks.]
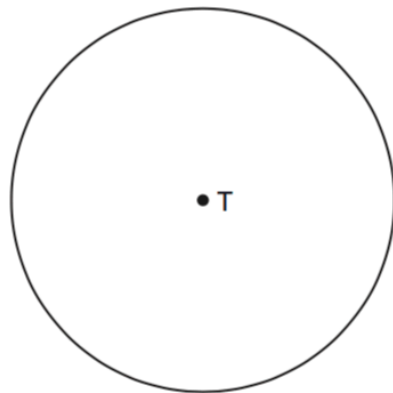
32 On the line segment below, use a compass and straightedge to construct equilateral triangle ABC.
[Leave all construction marks.]

A •————————————• B

• T