H Geometry Qtr 1 Cumulative Practice

Compiled from some old
NY Regents Common Core Exams

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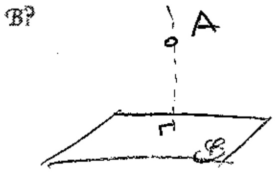
8 Point A is not contained in plane $\mathcal{B}$. How many lines can be drawn through point A that will be perpendicular to plane $\mathcal{B}$?

(1) one (3) zero
(2) two (4) infinite



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

Contrapose
If – swim
then – warm

(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.

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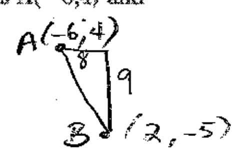
13 What is the length of the line segment with endpoints $A(-6,4)$ and $B(2,-5)$?

(1) $\sqrt{13}$ (3) $\sqrt{72}$
(2) $\sqrt{17}$ (4) $\sqrt{145}$



$\sqrt{8^2+9^2} = \sqrt{145}$

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

$y = -\frac{1}{2}x + 4$ $6y = -3x + 12$
$y = -\frac{1}{2}x + 2$

(1) the same line
(2) parallel
(3) perpendicular
(4) neither parallel nor perpendicular

same slope
diff. intercept

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

$\left(\frac{3x+5+x-1}{2}, \frac{3y-y}{2}\right)$

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

$\perp m = -\frac{1}{2}$

(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 $4x + 2y = 10$? $\longrightarrow m = -2$

(1) $y = \frac{1}{2}x - \frac{1}{2}$ (3) $y = 2x - 11$
(2) $y = -\frac{1}{2}x + \frac{13}{2}$ (4) $y = -2x + 17$

$y-3=-2(x-7)$
$y=-2x-17$

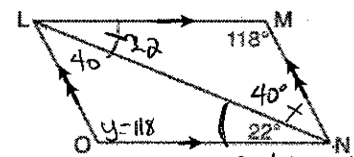
24 What is the slope of a line perpendicular to the line whose equation is $2y = -6x + 8$? $\longrightarrow m = -3$ so $\perp m = \frac{1}{3}$

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

Parallel Lines

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

$118 + 22 + x = 180$
$x = 40°$



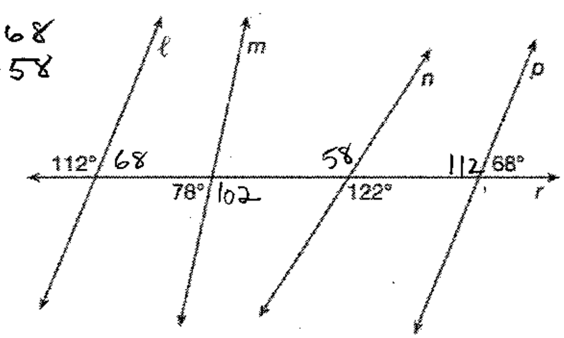
$40 + 22 + y = 180$, $y = 118$

Explain why $m\angle NLO$ is 40 degrees.

$\angle NLO$ is alt Int to $\angle LNM$ (x)
$\angle NLM$ is Alt Int and ≅ to 22° ($\angle LNO$)
Since $\triangle LNM$'s $\angle$'s add to 180°
$\angle LNM = 180 - 22 = 40$
and $\angle NLO$ is Alt. to $\angle LNM$

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

$180 - 112 = 68$
$180 - 122 = 58$

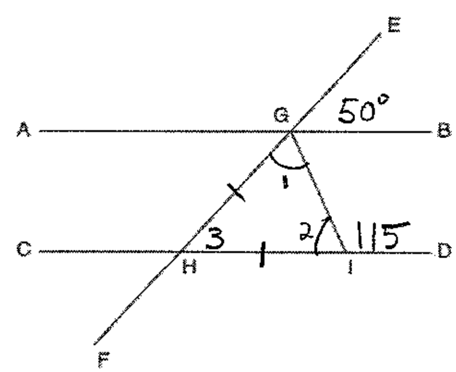


Which statement is true?

X (1) $\ell \parallel n$
(2) $\ell \parallel p$
(3) $m \parallel p$ X
(4) $m \parallel n$ X

Corr $\angle$'s ≅
iff lines ∥

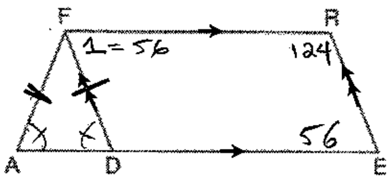
32 In the diagram below, $\overline{EF}$ intersects $\overline{AB}$ and $\overline{CD}$ at G and H, respectively, and $\overline{GI}$ is drawn such that $\overline{GH} \cong \overline{IH}$.



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

$m\angle 2 = 180 - 115 = 65$ (linear pair)
$m\angle 1 = \angle 2 = 65$ (Base Angles/trans.)
$m\angle 3 = 180 - 2(65) = 50°$ ($\triangle = 180°$)
$\overline{AB} \parallel \overline{CD}$ Corr $\angle$'s ≅ iff lines ∥

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

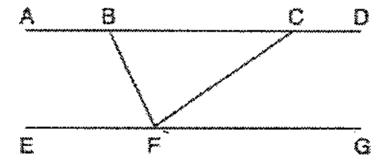


If $m\angle R = 124°$, what is $m\angle AFD$?

(1) 124°
(2) 112°
(3) 68°
$\boxed{\text{(4) } 56°}$

Proof
$\angle R + \angle E = 180$ C Int ∠'s
$\angle 1 + \angle R = 180$
$\angle 1 = 56°$ C Int ∠'s
$\angle D$ Alt Int 56°
$\angle A = \angle D$ Base Angle Th

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



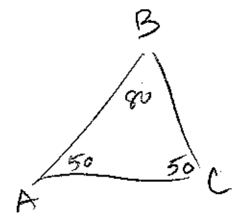
Alt Int

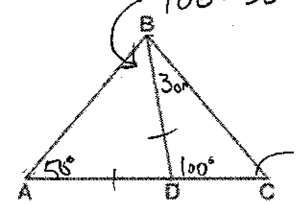
Which statement will allow Steve to prove $\overline{ABCD} \parallel \overline{EFG}$?

$\boxed{\text{(1) } \angle CFG \cong \angle FCB}$
(2) $\angle ABF \cong \angle BFC$
(3) $\angle EFB \cong \angle CFB$
(4) $\angle CBF \cong \angle GFC$

Triangles

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





100 − 50 = 50°
$\angle ABC = 50 + 30 = 80$
180 − 130 = 50

Which statement is true?

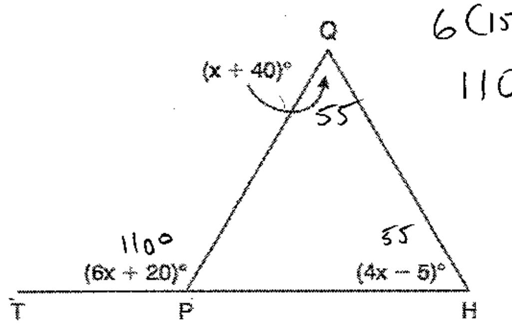
X (1) $\triangle ABD$ is obtuse. − all < 90
$\boxed{\text{(2) } \triangle ABC \text{ is isosceles.}}$
(3) $m\angle ABD = 80°$ X 50°
(4) $\triangle ABD$ is scalene. X isoc.

(ADB is iso too)

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 $m\angle QPT$. $= 6x+20$

$6(15)+20$

$110°$

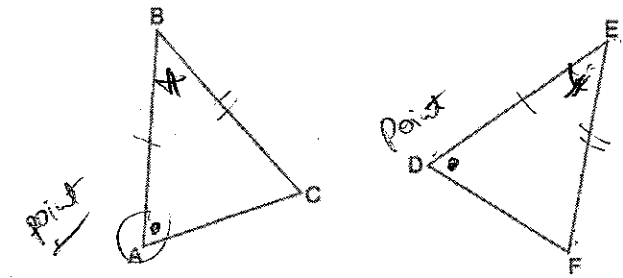


(Not drawn to scale)

$6x+20 = (x+40)+4x-5$

$x = 15$

24 Which statement is sufficient evidence that $\triangle DEF$ is congruent to $\triangle ABC$?



X (1) $AB = DE$ and $BC = EF$ only 2

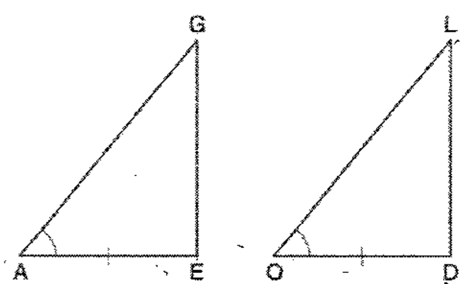
X (2) $\angle D \cong \angle A$, $\angle B \cong \angle E$, $\angle C \cong \angle F$ only angles

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

(4) There is a sequence of rigid motions that maps point A onto point D, $\overline{AB}$ onto $\overline{DE}$, and $\angle B$ onto $\angle E$. ASA ? No

point A not angle A!

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?

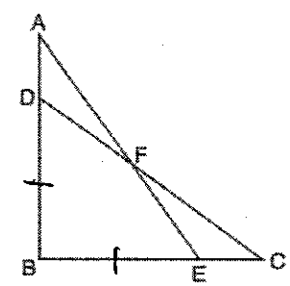
donkey X (1) $\overline{GE} \cong \overline{LD}$ opp ∠

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

(3) $\angle AGE \cong \angle OLD$ (AAS ≅)

(4) $\angle AEG \cong \angle ODL$ (ASA ≅)

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



share common angle ∠B

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

we need other side

(1) $\angle CDB \cong \angle AEB$

(2) $\angle AFD \cong \angle EFC$

(3) $\overline{AD} \cong \overline{CE}$

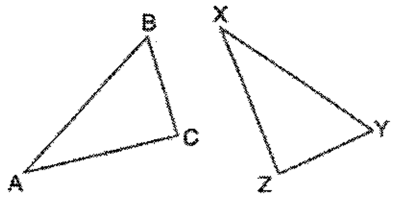
(4) ~~$\overline{AE} \cong \overline{CD}$~~

$AB = BC$

$AB = AD + DB$

$BC = CE + BE$

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



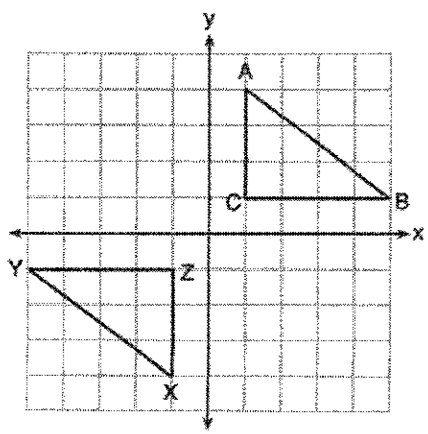
Which two statements identify corresponding congruent parts for these triangles?

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

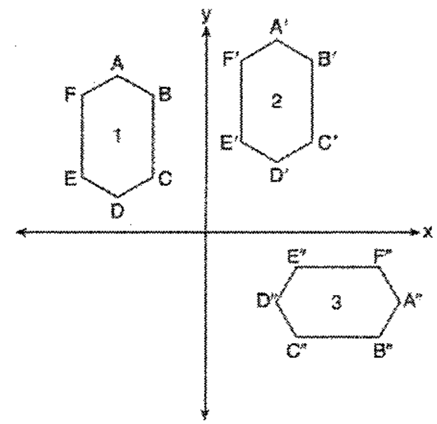
30 In the diagram below, $\triangle ABC$ and $\triangle XYZ$ are graphed.

Rotate 180° or reflect twice (one in each axis)



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

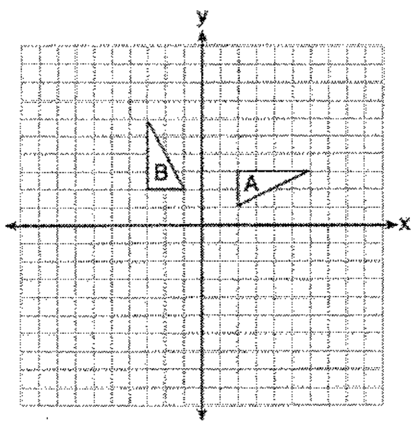
4 In the diagram below, congruent figures 1, 2, and 3 are drawn.



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

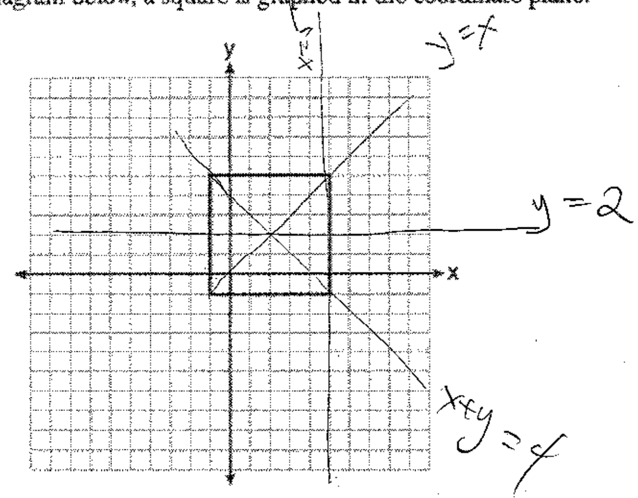
~~(1) a reflection followed by a translation~~
~~(2) a rotation followed by a translation~~
~~(3) a translation followed by a reflection~~
(4) a translation followed by a rotation

13 In the diagram below, which single transformation was used to map triangle A onto triangle B?



(1) line reflection
(2) rotation
(3) dilation
(4) translation

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) $x = 5$
(2) $y = 2$ OK
(3) $y = x$ OK
(4) $x + y = 4$ OK

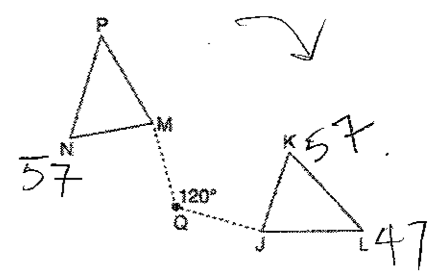
2 If $\triangle A'B'C'$ is the image of $\triangle ABC$, under which transformation will the triangles *not* be congruent?

(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 $A'B'C'$.

As a ridgid motion, reflection preserves angles and lengths
hence congruent angle and sides

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.

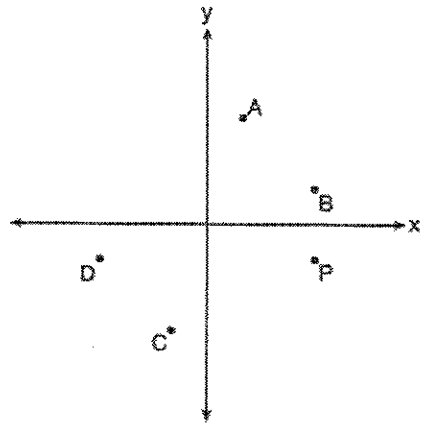


$\angle M = \angle J = 180 - 57 - 47$

$76°$

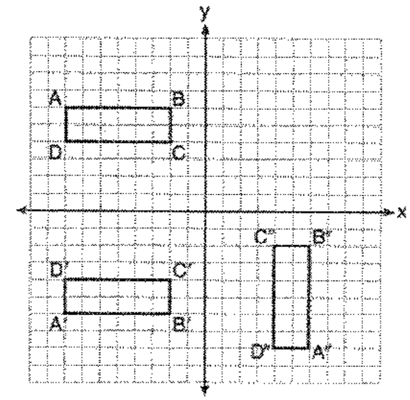
5 Which point shown in the graph below is the image of point P after a counterclockwise rotation of 90° about the origin?

90°



(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 $A''B''C''D''$?

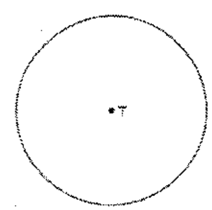
(1) a reflection followed by a rotation
(2) a reflection followed by a translation
~~(3)~~ a translation followed by a rotation
~~(4)~~ a translation followed by a reflection

Constructions

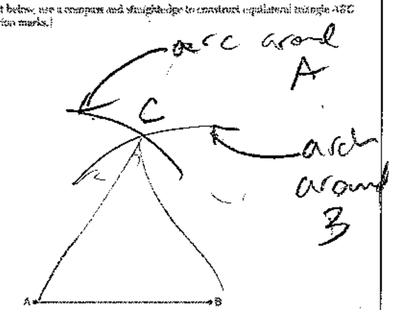
5 One step in a construction uses the endpoints of $\overline{AB}$ to create arcs with the same radii. The arcs intersect above and below the segment. What is the relationship of $\overline{AB}$ and the line connecting the points of intersection of these arcs?

(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.]



if arcs are same radius then intersection is C