Example Items

Geometry

Geometry Example Items are a **representative set** of items for the ACP. Teachers may use this set of items along with the test blueprint as guides to prepare students for the ACP. On the last page, the correct answer, content SE and SE justification are listed for each item.

The specific part of an SE that an Example Item measures is NOT necessarily the only part of the SE that is assessed on the ACP. None of these Example Items will appear on the ACP.

Teachers may provide feedback regarding Example Items.

(1) Download the Example Feedback Form and email it. The form is located on the homepage of Assessment.dallasisd.org.

OR

(2) To submit directly, click "Example Feedback" **after** you login to the Assessment website.

First Semester
2017–2018
Code #: 1101

$\mathcal{ACP}$ Formulas
Geometry/Geometry PAP
2017–2018

Perimeter and Circumference			
Square:	$P = 4s$	Rectangle:	$P = 2\ell + 2w$
Circle:	$C = 2\pi r$ $C = \pi d$	Arc Length:	$\ell = \frac{x}{360^\circ} \cdot 2\pi r$
Area			
Square:	$A = s^2$	Triangle:	$A = \frac{1}{2}bh$
Rectangle:	$A = \ell w$ $A = bh$	Regular Polygon:	$A = \frac{1}{2}aP$
Parallelogram:	$A = bh$	Circle:	$A = \pi r^2$
Rhombus:	$A = \frac{1}{2}d_1d_2$ $A = bh$	Sector of a Circle:	$A = \frac{x}{360^\circ} \cdot \pi r^2$
Trapezoid:	$A = \frac{1}{2}(b_1 + b_2)h$		
Lateral Surface Area			
Prism:	$L = Ph$	Pyramid:	$L = \frac{1}{2}P\ell$
Cylinder:	$L = 2\pi rh$	Cone:	$L = \pi r\ell$
Total Surface Area			
Prism:	$S = Ph + 2B$	Pyramid:	$S = \frac{1}{2}P\ell + B$
Cylinder:	$S = 2\pi rh + 2\pi r^2$	Cone:	$S = \pi r\ell + \pi r^2$
Sphere:	$S = 4\pi r^2$	Area of a Sector:	$A = \frac{x}{360^\circ} \cdot \pi r^2$
Volume			
Rectangular Prism:	$V = \ell wh$	Cube:	$V = s^3$
Prism:	$V = Bh$	Pyramid:	$V = \frac{1}{3}Bh$
Cylinder:	$V = \pi r^2h$ $V = Bh$	Cone:	$V = \frac{1}{3}Bh$ $V = \frac{1}{3}\pi r^2h$
Sphere:	$V = \frac{4}{3}\pi r^3$		
Polygons			
Interior Angle Sum:	$S = 180(n - 2)$	Measure of Exterior Angle:	$\frac{360^\circ}{n}$

$\mathcal{ACP}$ Formulas
Geometry/Geometry PAP
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Coordinate Geometry

Midpoint:	$M = \left(\frac{x_1 + x_2}{2}, \ \frac{y_1 + y_2}{2} \right)$
Distance:	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Slope of a Line:	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Slope-Intercept Form of a Line:	$y = mx + b$
Point-Slope Form of a Line:	$y - y_1 = m(x - x_1)$
Standard Form of a Line:	$Ax + By = C$
Equation of a Circle:	$(x - h)^2 + (y - k)^2 = r^2$

Trigonometry

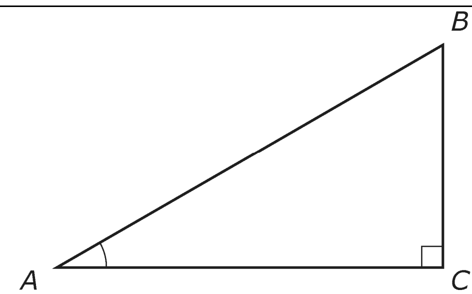
Pythagorean Theorem: $a^2 + b^2 = c^2$

Trigonometric Ratios:

$\sin A = \frac{\text{opposite leg}}{\text{hypotenuse}}$

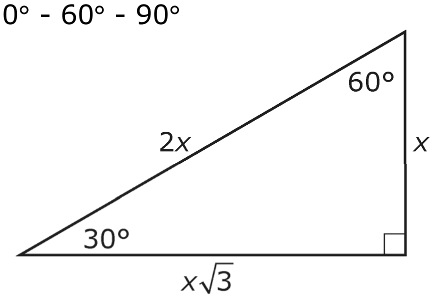
$\cos A = \frac{\text{adjacent leg}}{\text{hypotenuse}}$

$\tan A = \frac{\text{opposite leg}}{\text{adjacent leg}}$

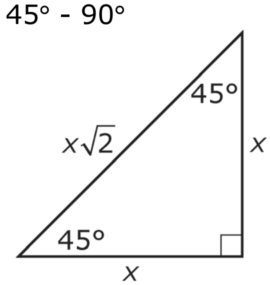


Special Right Triangles:

30° - 60° - 90°



45° - 45° - 90°



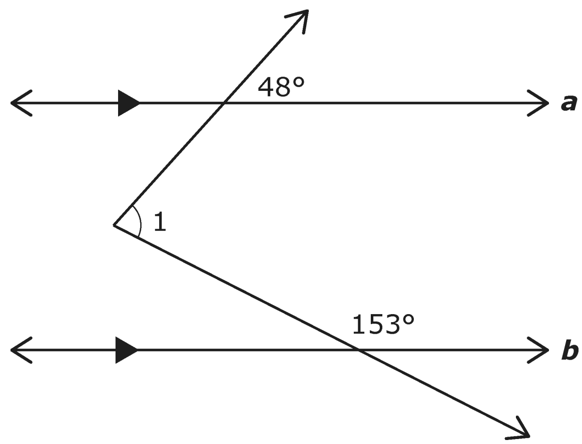
Law of Sines: $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

Law of Cosines: $a^2 = b^2 + c^2 - 2bc \cos A$ $\quad b^2 = a^2 + c^2 - 2ac \cos B$ $\quad c^2 = a^2 + b^2 - 2ab \cos C$

Probability

Permutations: $_nP_r = \frac{n!}{(n-r)!}$	Combinations: $_nC_r = \frac{n!}{(n-r)!r!}$

1 In the diagram, $a \parallel b$.



Based on the information in the diagram, what is $m\angle 1$?

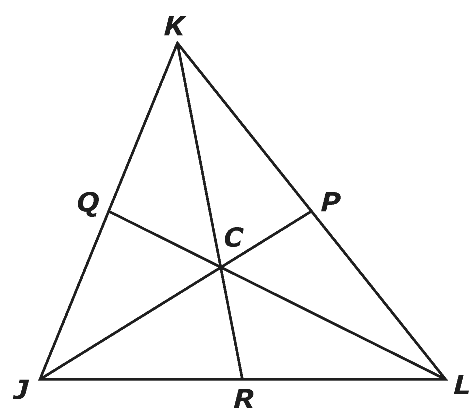
A 48°

B 75°

C 153°

D 201°

2 In $\triangle JKL$, C is the centroid and $\overline{QC} = 4$.



What is the length of $\overline{QL}$?

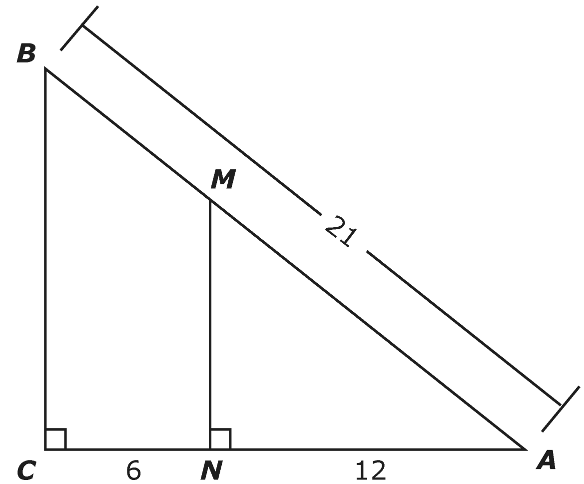
A 6

B 8

C 12

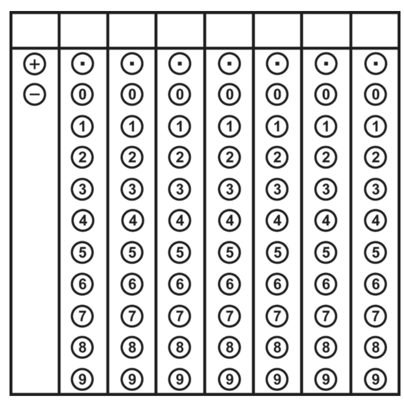
D 32

3 Triangle *ABC* is shown.

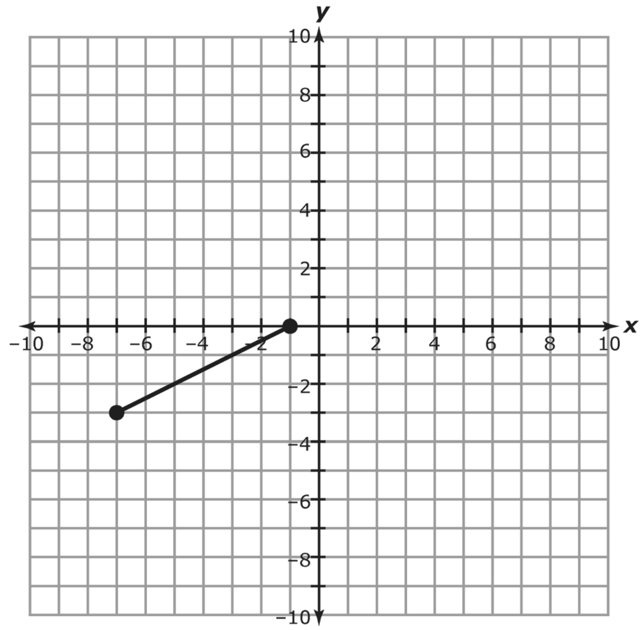


Based on the information in the diagram, what is the length of $\overline{BM}$?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.



4 $\overline{CT}$ has a midpoint at (−1, 0).



If C is located at (−7, −3), what is the location of point T?

A (−13, −6)

B (−4, −1.5)

C (2, 1.5)

D (5, 3)

5 During Geometry class, Clarence and Alicia wrote the conditional statement shown.

If two angles are acute, then they are congruent.

Which statement represents the inverse of the conditional?

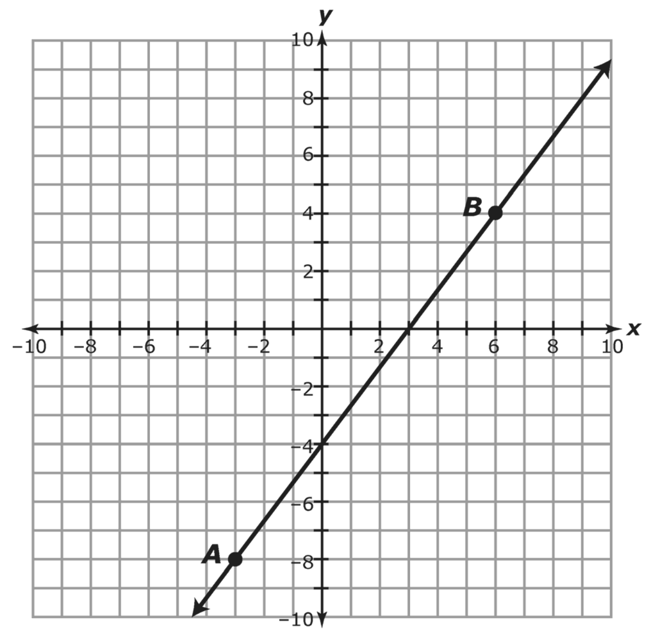
A If two angles are not acute, then they are not congruent.

B If two angles are congruent, then they are acute.

C If two angles are not congruent, then they are acute.

D If two angles are not congruent, then they are not acute.

6 The graph of $\overleftrightarrow{AB}$ is shown.



Which equation represents a line parallel to $\overleftrightarrow{AB}$ that passes through the point (0, 4)?

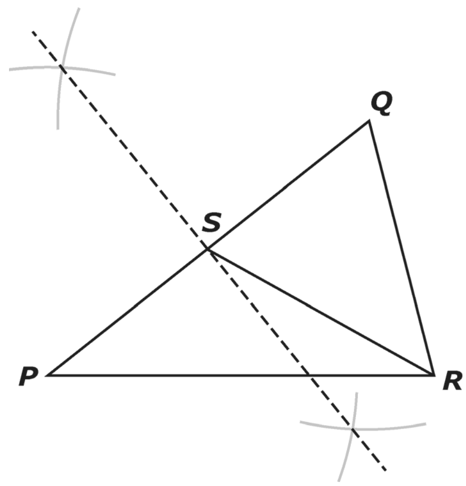
A $y = \frac{3}{4}x + 4$

B $y = \frac{4}{3}x + 4$

C $y = \frac{-4}{3}x + 4$

D $y = \frac{-3}{4}x + 4$

7 The diagram shows the arcs and segments used to construct $\overline{SR}$, given $\triangle PQR$.



Based on this construction, which term describes $\overline{SR}$?

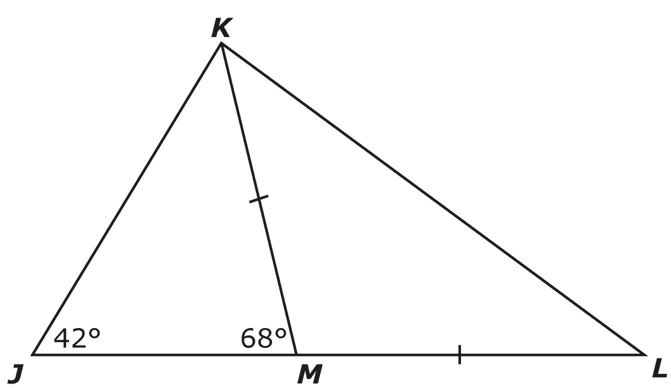
A Median

B Altitude

C Angle bisector

D Perpendicular bisector

8 Triangle *JKL* is shown.



Based on the information in the diagram, what is the measure of $\angle JKL$?

A 87°

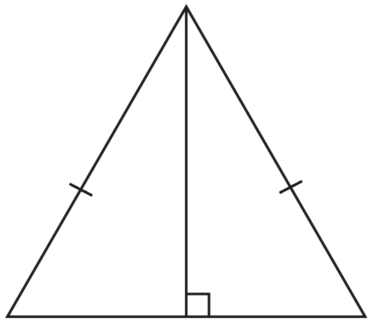
B 96°

C 104°

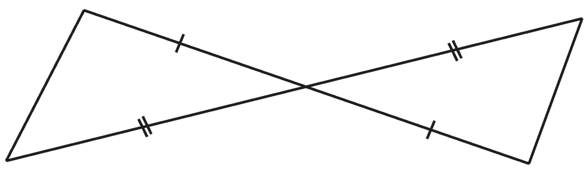
D 138°

9 Which diagram shows two triangles that are congruent by the Side-Angle-Side theorem?

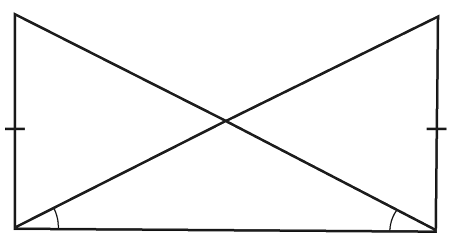
A



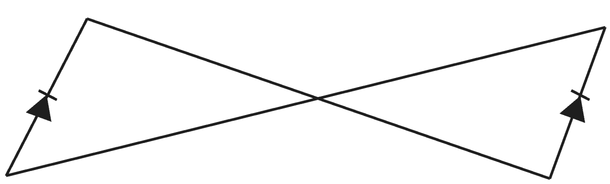
B



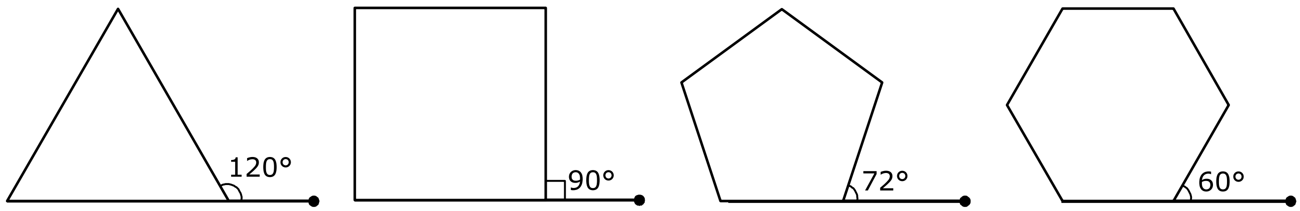
C



D

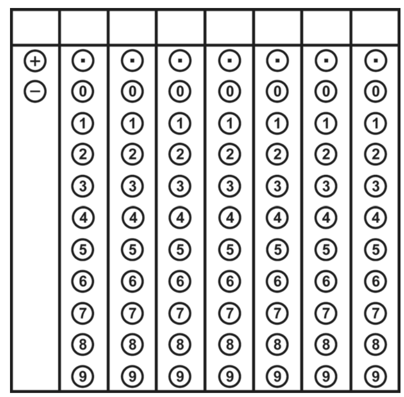


10 The figures shown are regular polygons.



There is a pattern formed by the number of sides in the polygon and the measure of each exterior angle of the polygon. If this pattern continues, what is the measure of each exterior angle, in degrees, of a regular polygon with 40 sides?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.



11 Euclid’s Fifth Postulate (Parallel Postulate) states “If there is a line and a point not on the line, then there exists exactly one line through the point that is parallel to the given line.” Is this also true in spherical geometry?

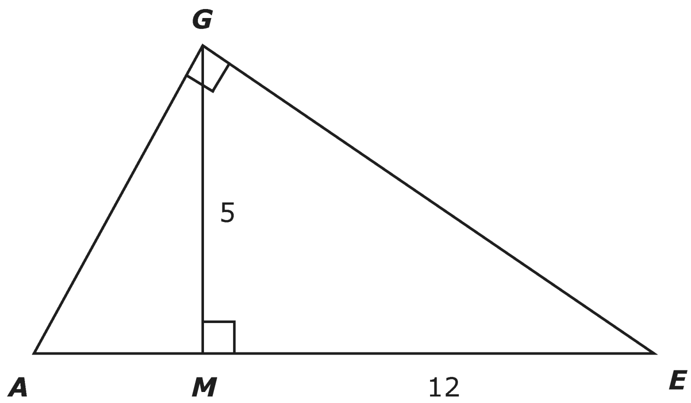
A No, there are no parallel lines in spherical geometry.

B No, there are many lines that pass through the point that are parallel to the given line.

C Yes, there is exactly one line through the point that is parallel to the given line.

D Yes, all postulates and facts are the same for spherical and plane geometry.

12 $\overline{GM}$ is an altitude of ΔAGE.



Based on the information in the diagram, what is the length of $\overline{AE}$?

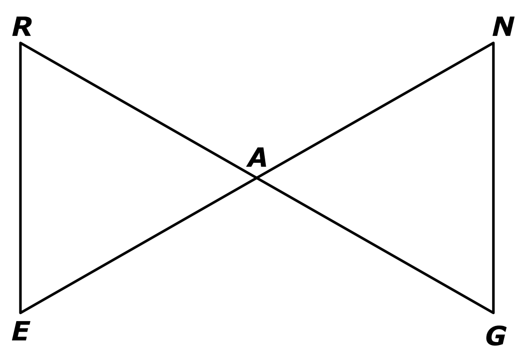
A 19.7

B 18.4

C 17.0

D 14.1

13 In the figure, $\overline{RA} \cong \overline{NA}$ and $\angle R \cong \angle N$.



Which triangle congruence theorem is used to prove $\Delta RAE \cong \Delta NAG$?

A AAS (Angle–Angle–Side)

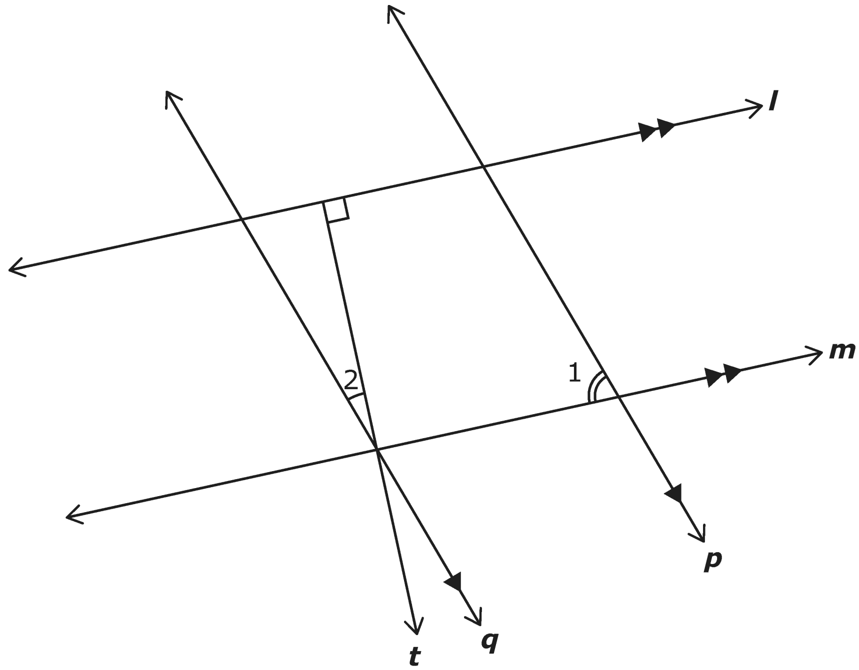
B ASA (Angle–Side–Angle)

C SAS (Side–Angle–Side)

D SSA (Side–Side–Angle)

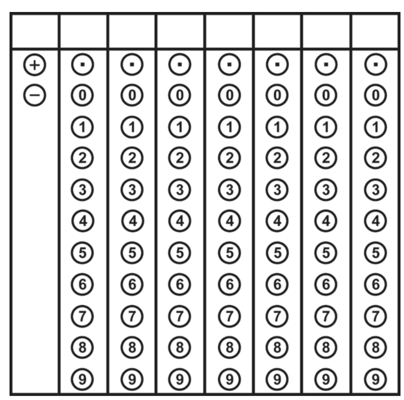
14 Line ***l***, line ***m***, line ***p***, line ***q***, and ray ***t*** are coplanar.

Given: $m\angle 1 = 7x + 3.5$
$m\angle 2 = 2x + 10$

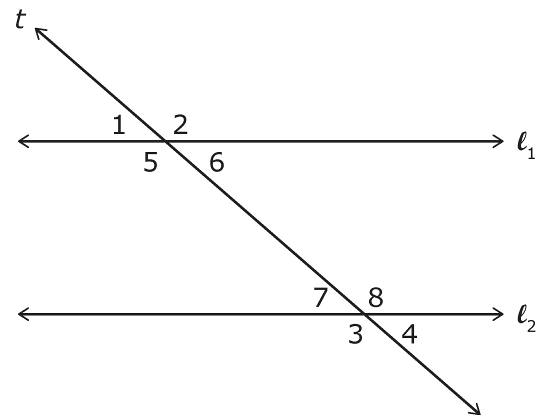


What value of x makes the information in this diagram true?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.



15 In the diagram, $\ell_1 \parallel \ell_2$



Based on the information in the diagram, which pair of angles are **not** congruent?

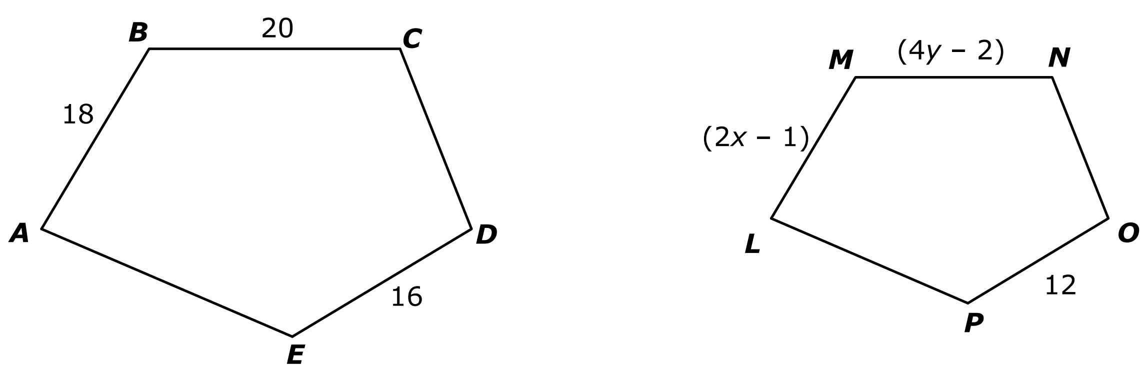
A $\angle 3$ and $\angle 5$

B $\angle 5$ and $\angle 8$

C $\angle 2$ and $\angle 5$

D $\angle 5$ and $\angle 7$

16 In the figures, pentagon *ABCDE* and pentagon *LMNOP* are drawn with the dimensions shown.



If pentagon *ABCDE* is similar to pentagon *LMNOP*, what is the value of x?

A 5.83

B 6.25

C 7.25

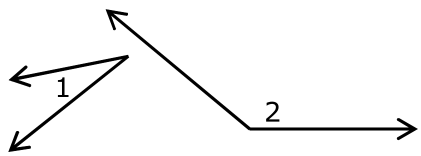
D 15.5

17 A geometry student concluded the statement shown.

Supplementary angles form a linear pair.

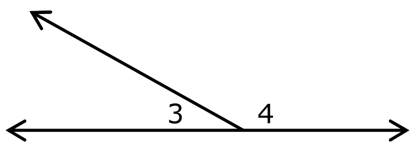
Which diagram represents a counterexample to this student's conclusion?

A



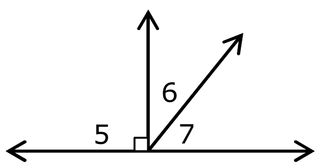
$\angle 1 = 12°$ $\angle 2 = 168°$

B



$\angle 3 = 25°$
$\angle 4 = 155°$

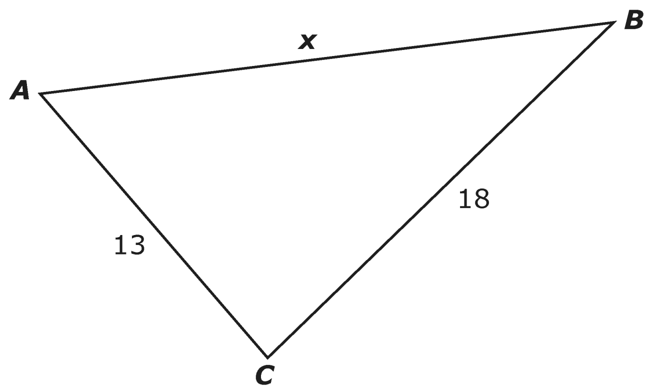
C



$\angle 5 = 90°$
$\angle 6 = 40°$
$\angle 7 = 50°$

D The statement is true, therefore there is no counterexample.

18 In $\triangle ABC$, $AC = 13$ and $BC = 18$ as shown.



Which inequality describes all possible lengths of $\overline{AB}$?

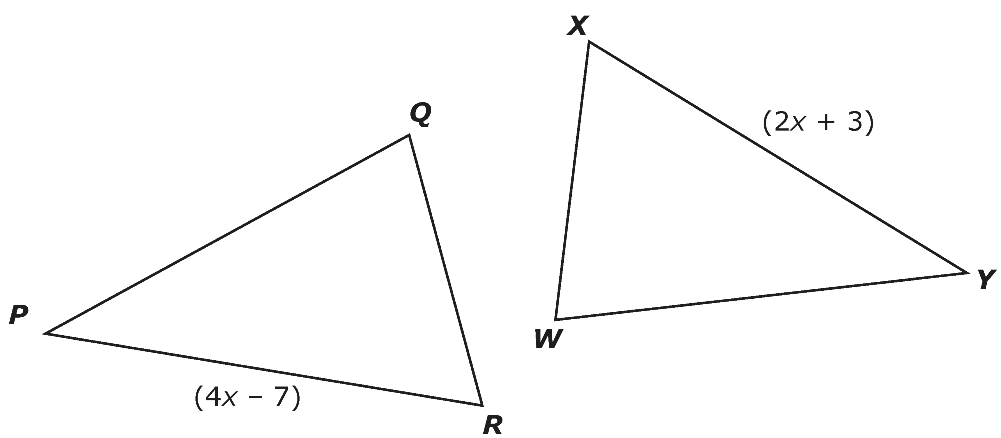
A $13 < x < 18$

B $13 \leq x \leq 18$

C $5 < x < 31$

D $5 \leq x \leq 31$

19 In the diagram, $\triangle PQR \cong \triangle YWX$.



Based on the information in the diagram, what is the length of $\overline{XY}$?

A 2

B 5

C 7

D 13

EXAMPLE ITEMS Geometry Key, Sem 1

Item#	Key	SE	SE Justification
1	B	G.6A	Verify theorems about angles formed by the intersection of lines including parallel lines cut by a transversal and apply these relationships to solve problems.
2	C	G.6D	Verify theorems about the relationships in triangles, including medians, and apply these relationships to solve problems.
3	7	G.8A	Apply theorems about similar triangles, including the Triangle Proportionality theorem to solve problems.
4	D	G.2B	Use midpoint formulas to verify geometric relationships.
5	A	G.4B	Identify the inverse of a conditional statement.
6	B	G.2C	Determine an equation of a line parallel to a given line that passes through a given point.
7	A	G.5C	Use the constructions of perpendicular bisectors to make conjectures about geometric relationships.
8	C	G.6D	Apply theorems about the relationships in triangles, including the sum of interior angles, to solve problems.
9	B	G.6B	Prove two triangles are congruent by applying the Side-Angle-Side congruence.
10	9	G.5A	Investigate patterns to make conjectures about geometric relationships, including exterior angles of polygons.
11	A	G.4D	Geometric relationships in spherical geometries, including parallel lines.
12	D	G.8B	Apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle, including the geometric mean, to solve problems.
13	B	G.6B	Prove two triangles are congruent by applying the Angle-Side-Angle congruence conditions.
14	8.5	G.6A	Verify theorems about angles formed by the intersection of lines including vertical angles, and angles formed by parallel lines cut by a transversal and apply these relationships to solve problems.
15	D	G.5A	Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal.
16	C	G.7A	Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides.
17	A	G.4C	Verify that a conjecture is false using a counterexample.
18	C	G.5D	Apply the Triangle Inequality theorem to solve problems.
19	D	G.6C	Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides.