

Mid-Course Test

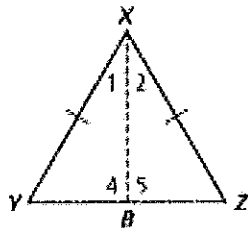
Form G

(1/2/05)

Chapters 1-6

1. Reorder the reasons of the following proof to match the correct statements.

Given: $\overline{XY} \cong \overline{XZ}$,
and \overline{XB} is the angle
bisector of $\angle X$.
Prove: $\overline{XB} \perp \overline{YZ}$



Statements

1. $\overline{XY} \cong \overline{XZ}$

2. $\angle 1 \cong \angle 2$

3. $\overline{XB} \cong \overline{XB}$

4. $\triangle XYB \cong \triangle XZB$

5. $\angle 4 \cong \angle 5$

6. $m\angle 4 + m\angle 5 = 180$

7. $2 \cdot m\angle 4 = 180$

8. $m\angle 4 = 90$

9. $\overline{XB} \perp \overline{YZ}$

Reasons

1. Given

a. Reflexive
Property of \cong

b. Corresp. Parts
of \cong \triangle s are \cong .

c. Substitution
Property of \cong

d. Definition of \angle
bisector

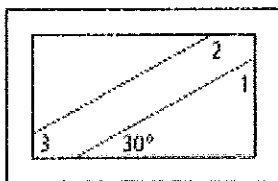
e. SAS

f. Division
Property of $=$

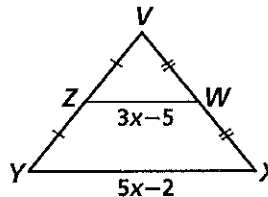
g. \angle s that form
a straight \angle are
supplementary.

9. Definition of \perp

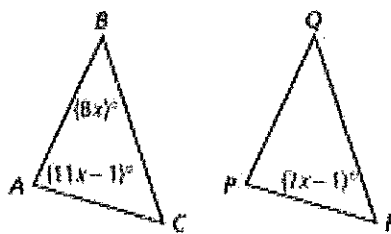
2. A carpenter adds a diagonal brace to a rectangular frame as shown. If the carpenter wants the triangles on either side of the brace to be congruent, what should be the measures of $\angle 1$, $\angle 2$, and $\angle 3$?



3. Find the length of \overline{WZ} .

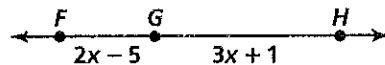


4. $\triangle ABC$ is similar to $\triangle PQR$. Find the value of x .

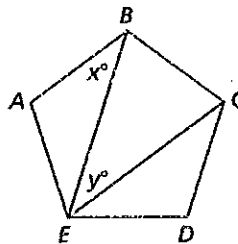


5. Graph quadrilateral $WXYZ$ with vertices $W(-3, 4)$, $X(2, 4)$, $Y(3, -1)$, and $Z(-2, -1)$ to determine its most precise name.

6. $FH = 56$. Find the value of x .



7. Find the values of the variables, given that $ABCDE$ is a regular pentagon.



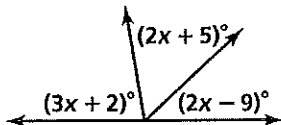
8. Write an equation for the line perpendicular to $y = \frac{2}{3}x + 1$ that contains $(0, 2)$.

Mid-Course Test (continued)

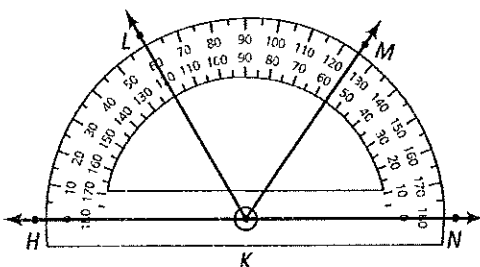
Form G

Chapters 1-6

9. Find the value of x .

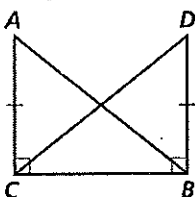


10. What is the measure of $\angle HKM$? Classify the angle as *acute*, *right*, *obtuse*, or *straight*.

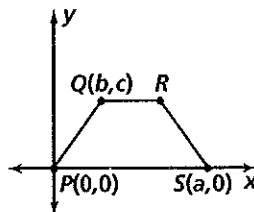


11. What is the measure of an exterior angle of a regular hexagon?

12. Name a pair of overlapping congruent triangles. State whether the triangles are congruent by SSS, SAS, ASA, AAS, or HL.

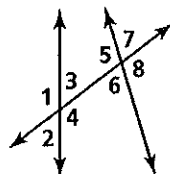


13. For isosceles trapezoid $PQRS$, give the coordinates of R without using any new variables.

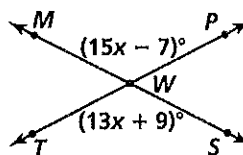


14. Refer to the diagram.

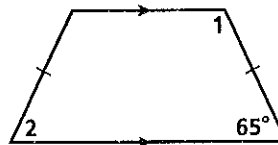
- Name a pair of same-side interior angles.
- Name a pair of corresponding angles.



15. Find $m\angle MWT$.



16. Find the measures of $\angle 1$ and $\angle 2$.



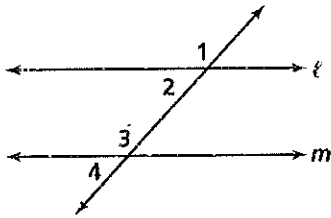
9. 26 10. 125°
 obtuse 11. 60 12. $\triangle DCB \cong \triangle CAB$ by SAS.
 13. $(a-b, c)$ 14a. $\angle 3$ and $\angle 5$ or $\angle 4$ and $\angle 6$
 14b. $\angle 1$ and $\angle 5$, $\angle 2$ and $\angle 6$, $\angle 3$ and $\angle 7$, or
 $\angle 4$ and $\angle 8$ 15. 67° 16. 115; 65

Mid-Course Test (continued)

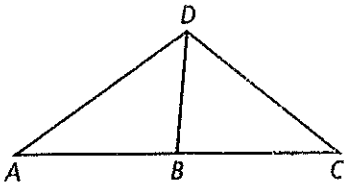
Form G

Chapters 1–6

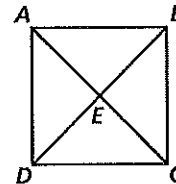
17. What is the circumcenter of a triangle?
 18. What is the orthocenter of a triangle?
 19. What conditions in the figure below will prove $\ell \parallel m$?



20. Line ℓ is perpendicular to line m . Line m is also perpendicular to line n . Line n is parallel to line p . How are lines ℓ and p related? Justify your answer.
 21. If $\triangle ACB \cong \triangle CFD$, what are the congruent corresponding pairs?
 22. Explain why a rectangle is always a parallelogram, but a parallelogram is not always a rectangle.
 23. Relate side lengths AD and CD , given $\overline{AB} \cong \overline{CB}$ and $m\angle DBC < 90^\circ$.

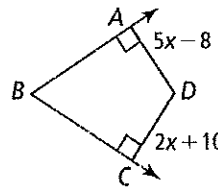


For Exercises 24–28, give $ABCD$ the most precise name possible. Choose from *quadrilateral, parallelogram, rectangle, rhombus, kite, square, and trapezoid*.

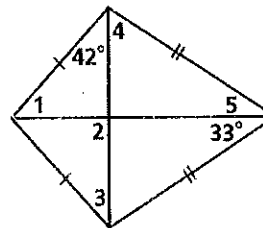


24. $ABCD$ is a parallelogram; $m\angle DEA = 90$.
 25. $ABCD$ is a parallelogram; $AD = DC$; $AC = DB$.
 26. $AE = CE, DE = BE$
 27. $AE = BE = CE = DE$
 28. $\overline{AB} \cong \overline{DC}; \overline{AD} \cong \overline{BC}; \overline{AC} \perp \overline{BD}$

29. Find x so D lies on the angle bisector of $\angle ABC$.



30. Find the measures of the numbered angles.



23. $AD > CD$ 24. rectangle 25. rhombus
 26. square 27. parallelogram 28. rectangle
 29. rhombus 30. 6

17. The circumcenter of a triangle is the point of concurrency of the perpendicular bisectors of the triangle. 18. The orthocenter of a triangle is the point of concurrency of the lines that contain the altitudes of the triangle. 19. $\angle 1 \cong \angle 3$ or $\angle 2 \cong \angle 4$ or $m\angle 1 + m\angle 4 = 180^\circ$ or $m\angle 2 + m\angle 3 = 180^\circ$. Line ℓ is parallel to line p ; since lines ℓ and n are both perpendicular to line m , they are parallel to each other. Since lines ℓ and p are both parallel to line n , line ℓ and p are parallel to each other by Transitive Property of Parallel Lines.

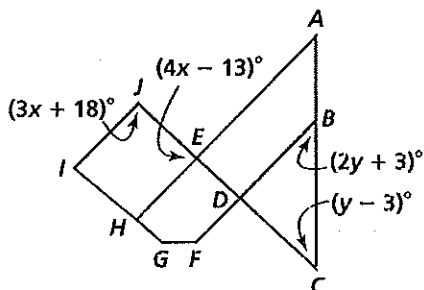
21. $\overline{AC} \cong \overline{CF}; \overline{CB} \cong \overline{FD}; \overline{BA} \cong \overline{DC}; \angle BAC \cong \angle DCF; \angle ACB \cong \angle CFD; \angle CBA \cong \angle FDC;$
 22. Answers may vary. Sample: A rectangle always has opposite sides parallel, making it a parallelogram. A parallelogram doesn't always have four right angles, so it is not always a rectangle.

Mid-Course Test (continued)

Form G

Chapters 1-6

31. Find the values of the variables, given $\overline{BF} \parallel \overline{AH} \parallel \overline{IJ}$ and $\overline{IJ} \perp \overline{GI}$.

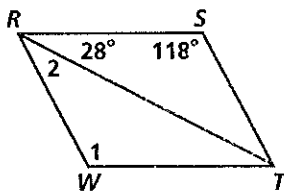


- ~~32.~~ Find the midpoint of \overline{AB} with $A(-1, 5)$ and $B(6, -3)$.

33. What can you conclude from the given true statements?

If it is raining, soccer practice will be canceled.
It is raining.

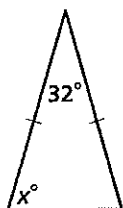
34. In parallelogram $RSTW$, find $m\angle 1$ and $m\angle 2$.



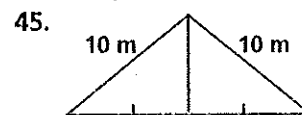
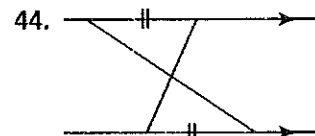
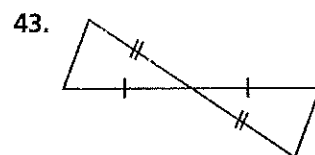
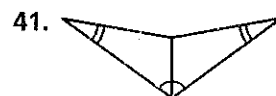
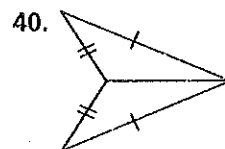
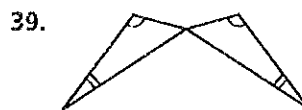
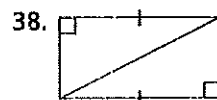
- ~~35.~~ What is the distance between $(-2, 3)$ and $(4, -1)$? Round your answer to the nearest tenth.

- ~~36.~~ A circle has radius 12 in. Find its area and circumference to the nearest tenth.

37. Find the value of x .



For each pair of triangles, state the postulate or theorem you can use to prove the triangles congruent. If the triangles cannot be proven congruent, write *not possible*.



31. 48; 90; 42; 57; 33
32. $x = 25; y = 31$
33. (2.5, 1) 34. 118; 34
35. 7.2 36. area = 452.4 in.²; circumference = 75.4 in. 37. 74 38. HL 39. not possible 40. SSS 41. AAS 42. not possible 43. SAS 44. ASA or AAS 45. SSS or SAS

Mid-Course Test

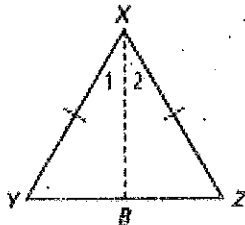
Form K (1/2015)

Chapters 1-6

1. Reorder the reasons of the following proof to match the correct statements.

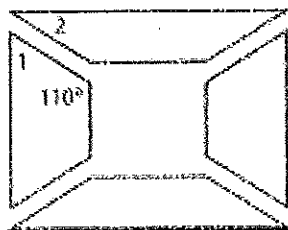
Given: $\overline{XY} \cong \overline{XZ}$, and \overline{XB} is the angle bisector of $\angle X$.

Prove: $\angle Y \cong \angle Z$

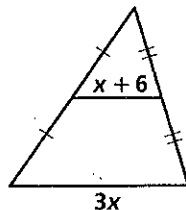


Statements	Reasons
1. $\overline{XY} \cong \overline{XZ}$	a. Given
2. $\angle 1 \cong \angle 2$	b. Corresp. Parts of $\cong \Delta$ s are \cong .
3. $\overline{XB} \cong \overline{XB}$	c. Definition of \angle bisector
4. $\Delta XYB \cong \Delta XZB$	d. Reflexive Property of \cong
5. $\angle Y \cong \angle Z$	e. SAS

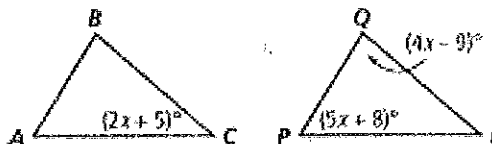
2. If the four trapezoidal pieces shown below fit together to form a rectangular frame, what must be the measures of $\angle 1$ and $\angle 2$?



3. Find the value of x .

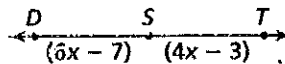


4. ΔABC is similar to ΔPQR . Find the value of x .

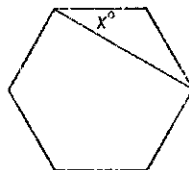


5. Graph quadrilateral $ABCD$ with vertices $A(-5, 2)$, $B(-5, -3)$, $C(2, -3)$, and $D(2, 2)$ to determine its most precise name.

6. Find the value of x if $DT = 100$.



7. Find the value of x , given that the figure is a regular hexagon.



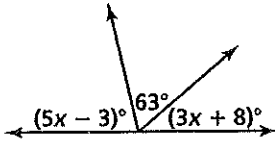
Mid-Course Test (continued)

Form K

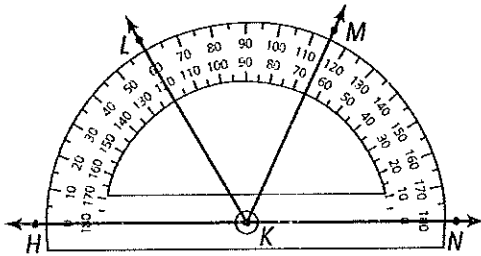
Chapters 1-6

8. Graph a line perpendicular to $y = -\frac{1}{3}x + 2$ that contains $(1, 1)$.

9. Find the value of x .

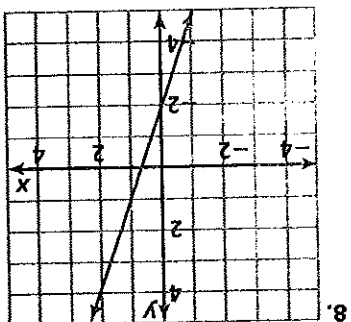
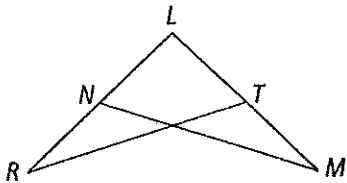


10. What is the measure of $\angle HKL$? Classify the angle as *acute*, *right*, *obtuse*, or *straight*.

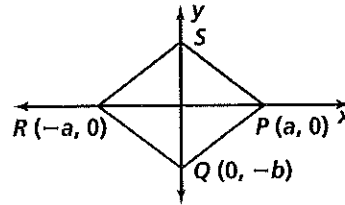


11. What is the measure of an exterior angle of a regular octagon?

12. Name two triangles that share a common angle. What is the common angle?

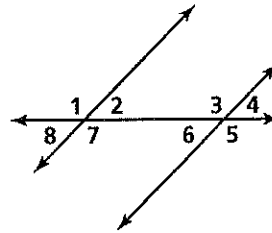


13. For rhombus $PQRS$, give the coordinates of S without using any new variables.

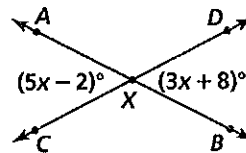


14. Refer to the diagram.

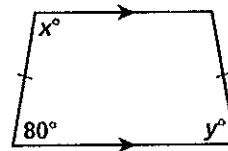
- a. Name a pair of same-side interior angles.
b. Name a pair of alternate interior angles.



15. Find the value of x .



16. Find the values of x and y .



17. What is the name of the point of concurrency of the angle bisectors of a triangle?

18. What is the name of the point of concurrency of the medians of a triangle?

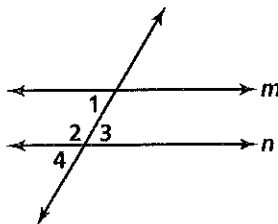
9. 14 10. 60°; acute 11. 45
12. $\triangle LRT$ and $\triangle LMN$; $\angle RLM$ 13. $(0, b)$
14a. $\angle 2$ and $\angle 3$ or $\angle 6$ and $\angle 7$ 14b. $\angle 2$ and $\angle 6$
or $\angle 3$ and $\angle 7$ 15. 5 16. $x = 100, y = 80$
17. incenter 18. centroid

Mid-Course Test (continued)

Form K

Chapters 1–6

19. What conditions in the figure below will not prove $m \parallel n$?



- A $\angle 1 \cong \angle 3$
- B $m\angle 1 + m\angle 2 = 180^\circ$
- C $\angle 1 \cong \angle 4$
- D $m\angle 2 + m\angle 3 = 180^\circ$

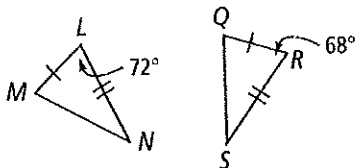
20. Line m is parallel to line ℓ . Line m is also parallel to line n . How are lines ℓ and n related? Justify your answer.

21. If $\triangle DLQ \cong \triangle EMR$, then which of the following is NOT necessarily true?

- A $\angle LDQ \cong \angle MRE$
- B $\angle DLQ \cong \angle EMR$
- C $\angle RME \cong \angle QLD$
- D $\angle MRE \cong \angle LQD$

22. Explain why a square is always a rhombus, but a rhombus is not always a square.

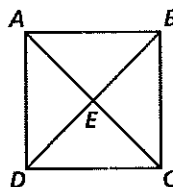
23. Write an inequality relating side lengths MN and QS .



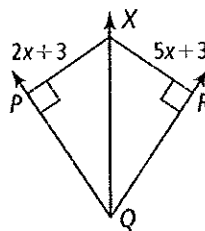
19. J 20. Line ℓ is parallel to line n by the Transitive Property of Parallel Lines. 21. A 22. Answers may vary. Sample: A square always has four congruent sides, so it's always a rhombus. However, a rhombus has 4 congruent sides but it doesn't always have 4 right angles, so it's not always a square. 23. $MN < QS$

24–29

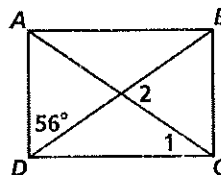
For Exercises 24–29, give $ABCD$ the most precise name possible. Choose from quadrilateral, parallelogram, rectangle, rhombus, kite, square, and trapezoid.



- 24. $ABCD$ parallelogram, $AB = BC$
- 25. $AC = BD, m\angle DEA = 90$
- 26. $\overline{AB} \parallel \overline{DC}$, $\angle A$ and $\angle B$ are supplementary
- 27. $AE = EC = BE = ED$
- 28. $\overline{AD} \parallel \overline{BC}$, $AD = BC$
- 29. $ABCD$ parallelogram, $AB = BC, AD = DC$
- 30. \overline{QX} bisects $\angle PQR$. What is PX ?



31. Find the measures of $\angle 1$ and $\angle 2$ in rectangle $ABCD$.



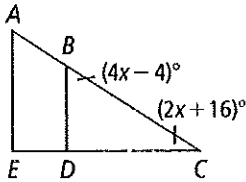
24. rhombus
25. square 26. parallelogram 27. rectangle 28. parallelogram 29. rhombus 30. 3
31. $m\angle 1 = 34^\circ, m\angle 2 = 68^\circ$

Mid-Course Test (continued)

Form K

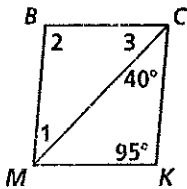
Chapters 1-6

32. Find the value of x , given $\overline{AE} \perp \overline{EC}$ and $\overline{AE} \parallel \overline{BD}$.



33. Find the midpoint of \overline{AB} with $A(7, -2)$ and $B(-5, 6)$.

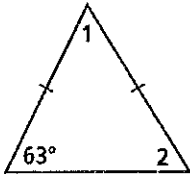
34. In parallelogram $BCKM$, find $m\angle 1$, $m\angle 2$, and $m\angle 3$.



35. What is the distance between $(-1, 6)$ and $(5, -2)$?

36. A circle has radius 16 in. Find its circumference and area to the nearest tenth.

37. Find $m\angle 1$ and $m\angle 2$.



32. 13 33. (1, 2)
 34. $m\angle 1 = 40^\circ, m\angle 2 = 95^\circ, m\angle 3 = 45^\circ$
 35. 10 36. $C \approx 100.5$ in., $A \approx 804.2$ in.²
 37. $m\angle 1 = 54^\circ, m\angle 2 = 63^\circ$ 38. HL 39. not possible 40. SSS 41. AAS 42. ASA 43. SAS 44. AAS 45. HL

For each pair of triangles, state the postulate or theorem you can use to prove the triangles congruent. If the triangles cannot be proven congruent, write *not possible*.

