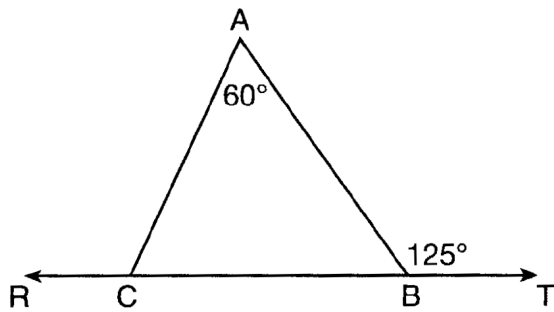**Holiday Packet: Counts as 5 homework assignments. SHOW YOUR WORK & PROVIDE A BRIEF E**

1. The measures of the angles of a triangle are in the ratio 2:3:4. In degrees, the measure of the *largest* angle of the triangle is

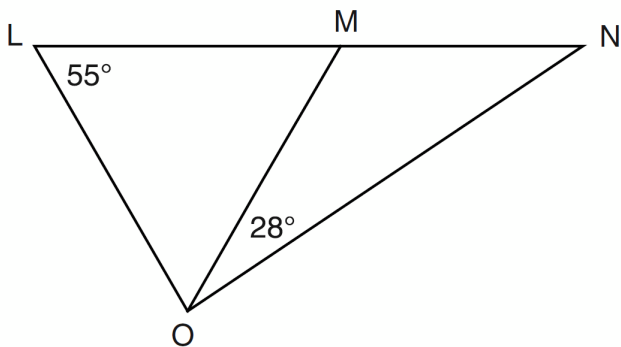   A) 20   B) 40   C) 80   D) 100

2. In the diagram below, $\overline{RCBT}$ and $\triangle ABC$ are shown with $mm\angle A = 60$ and $m\angle ABT = 125$.

What is $m\angle ACR$?

    A) 125   B) 115   C) 65   D) 55

3. In the diagram below, $\triangle LMO$ *is isosceles with* $LO = MO$.

If $m\angle L = 55$ *and* $m\angle NOM = 28$, *what is* $m\angle N$?

    A) 27   B) 28   C) 42   D) 70

4. Which numbers could represent the length of the sides of a triangle?

    A) 5, 9, 14   B) 7, 7, 15   C) 1, 2, 4   D) 3, 6, 8

5. In $\triangle ABC$, $\angle A \cong \angle B$ and $\angle C$ is an obtuse angle. Which statement is true?

 A) $\overline{AC} \cong \overline{AB}$ and $\overline{BC}$ is the longest side. B) $\overline{AC} \cong \overline{BC}$ and $\overline{AB}$ is the longest side.
 C) $\overline{AC} \cong \overline{AB}$ and $\overline{BC}$ is the shortest side. D) $\overline{AC} \cong \overline{BC}$ and $\overline{AB}$ is the shortest side.

6. Which set of numbers could *not* represent the lengths of the sides of a right triangle?

 A) $\{1,3,\sqrt{10}\}$ B) $\{2,3,4\}$ C) $\{3,4,5\}$ D) $\{8,15,17\}$

7. For which measures of the sides of $\triangle ABC$ is angle B the largest angle of the triangle?

 A) $AB = 2$, $BC = 6$, $AC = 7$ B) $AB = 6$, $BC = 12$, $AC = 8$
 C) $AB = 16$, $BC = 9$, $AC = 10$ D) $AB = 18$, $BC = 14$, $AC = 5$

8. In $\triangle ABC$, $m\angle A = 60$, $m\angle B = 80$, and $m\angle C = 40$. Which inequality is true?

 A) $AB > BC$ B) $AC > BC$ C) $AC < BA$ D) $BC < BA$

9. What is the perimeter of a square whose diagonal is $3\sqrt{2}$?

 A) 18   B) 12   C) 9   D) 6

10. If the length of a rectangular television screen is 20 inches and its height is 15 inches, what is the length of its diagonal, in inches?

 A) 5   B) 13.2   C) 25   D) 35

11. Base your answer to the following question on The accompanying diagram shows a kite that has been secured to a stake in the ground with a 20-foot string. The kite is located 12 feet from the ground, directly over point X. What is the distance, in feet, between the stake and point X?
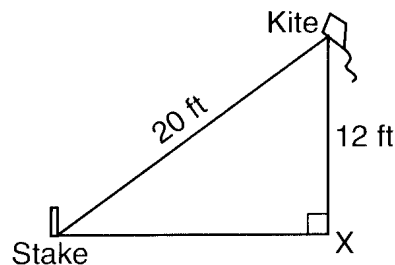
12. Base your answer to the following question on The NuFone Communications Company must run a telephone line between two poles at opposite ends of a lake, as shown in the accompanying diagram. The length and width of the lake are 75 feet and 30 feet, respectively.
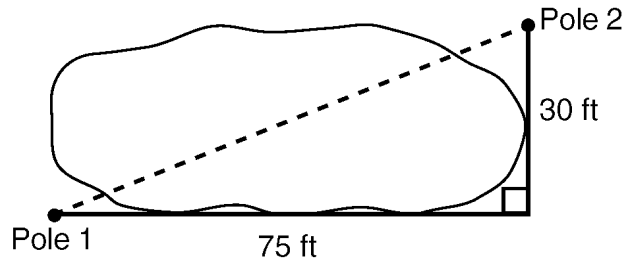
What is the distance between the two poles, to the *nearest foot*?

A) 105   B) 81   C) 69   D) 45

13. In the accompanying diagram, triangle *A* is similar to triangle *B*.
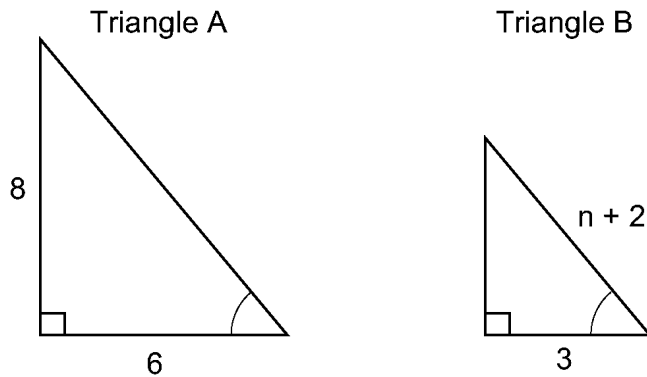
Find the value of *n*.

14. A triangular room has sides of 10 feet, 10 feet and 14.14 feet. Which of the following must be an angle of the room?

A) 30°   B) 35°   C) 40°   D) 45°

15. A triangular window has sides of 6 feet, 8 feet and 10 feet. Which of the following must be one of the angles of the window?
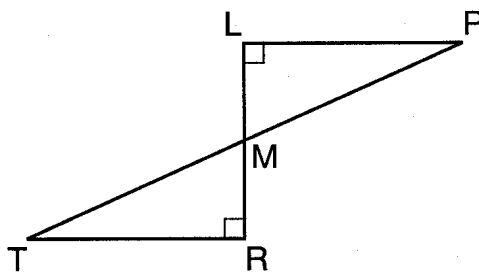
A) 30°   B) 45°   C) 60°   D) 90°

16. Base your answer to the following question on In the accompanying diagram, $\overline{ACE}$, $\overline{BCD}$, $\overline{AB}$, and $\overline{DE}$, $\angle A \cong \angle E$, and C is the midpoint of $\overline{AE}$.

A   B
C
D   E
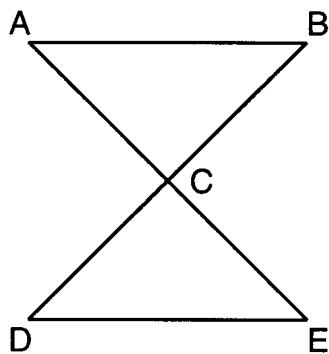
Which theorem justifies $\triangle ABC \cong \triangle EDC$?

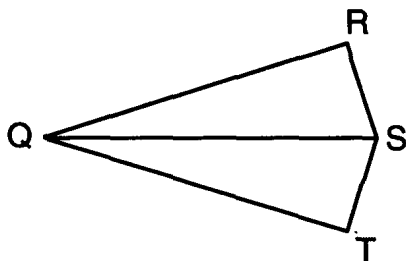A) SSS $\cong$ SSS   B) SAS $\cong$ *SAS*   C) ASA $\cong$ *ASA*   D) SSA $\cong$ *SSA*

17. In the accompanying diagram, $\overline{RL} \perp \overline{LP}$, $\overline{LR} \perp \overline{RT}$, and *M* is the midpoint of $\overline{TP}$.

L   P
M
T   R

Which method could be used to prove
$\triangle TMR \cong \triangle PML$?

A) SAS $\cong$ SAS   B) AAS $\cong$ AAS   C) HL $\cong$ HL   D) SSS $\cong$ SSS

18. Base your answer to the following question on In the accompanying diagram of quadrilateral *QRST*, $\overline{RS}$ $\perp \overline{ST}$, $\overline{SR} \cong \overline{OR}$, *and* $\overline{ST} \perp \overline{QT}$.
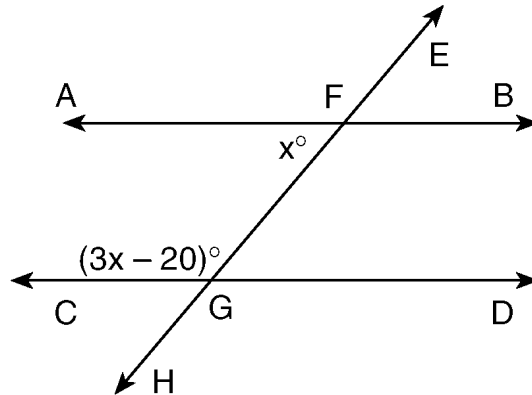
R
Q   S
T

Which method of proof may be used to prove
$\triangle QRS \cong \triangle QTS$?

A) HL   B) SAS   C) AAS   D) ASA

19. The measures of two complementary angles are represented by $(3x + 15)$ and $(2x - 10)$. What is the value of x?
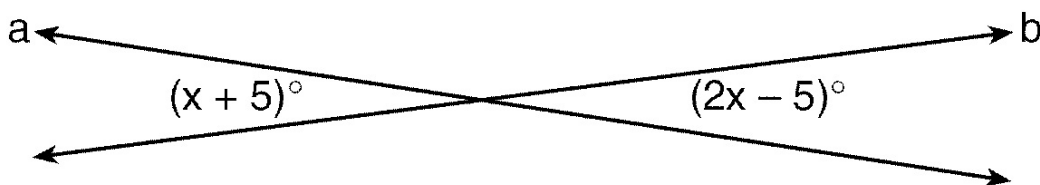
    A) 17   B) 19   C) 35   D) 37

20. Base your answer to the following question on In the accompanying diagram, $\overleftarrow{AB} \parallel \overleftarrow{CD}$, $\overleftarrow{EFGH}$ is transversal, m$\angle AFG$ = x, and m$\angle CGF$ = $3x – 20$. Find the value of x.

21. Base your answer to the following question on In the accompanying diagram, m$\angle ABD$ = 72 and $\overline{FBE}$ bisects $\angle ABD$. Find m$\angle ABF$.
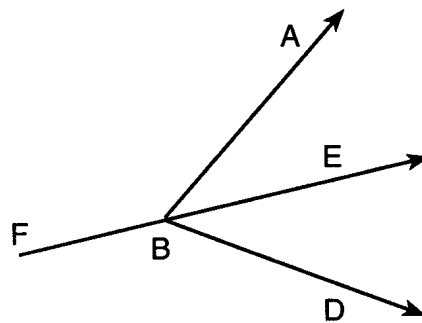
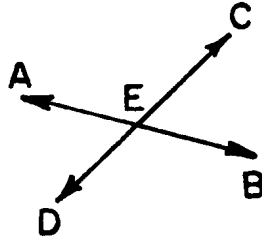
22. In the accompanying diagram, line a intersects line b.
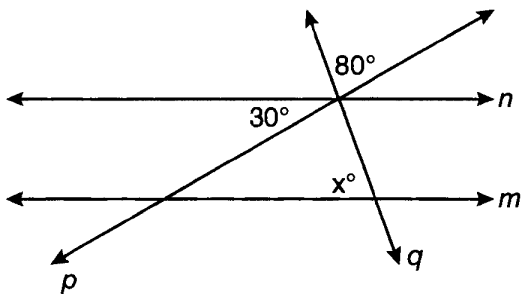

    What is the value of x?

    A) –10   B) 5   C) 10   D) 90

23. Base your answer to the following question on In the accompanying figure, m∠*AEC* = *5x + 20 and m∠ DEB = 3x + 60. Find x.*

24. Base your answer to the following question on In the diagram below, lines *n* and *m* are cut by transversals *p* and *q*.

Which value of *x* would make line *n* and *m* parallel?

A) 110   B) 80   C) 70   D) 50

25. A transversal intersects two lines. Which condition would always make the two lines parallel?

A) Vertical angles are congruent.
B) Alternate interior angles are congruent.
C) Corresponding angles are supplementary.
D) Same-side interior angles are complementary.

26. Triangle ABC has vertices A(0,0), B(3,2), and C(0,4). This triangle may be classified as

A) equilateral   B) isosceles   C) right   D) scalene

27. In isosceles triangle *ABC*, *AB* = *BC*. Which statement will always be true?
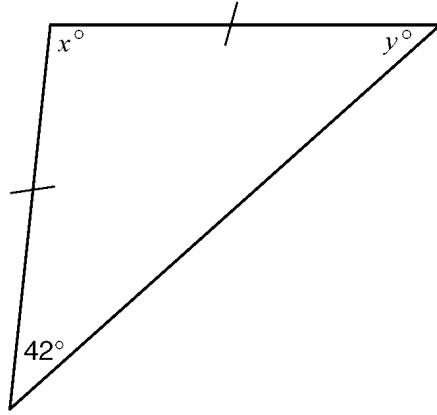
A) m∠*B* = m∠*A*   B) m∠*A* > m∠*B*   C) m∠*A* = m∠*C*   D) m∠*C* < m∠*B*

28. What is the length of the altitude of an equilateral triangle whose side has a length of 8?

   A) 32 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) 4

29. Base your answer to the following question on Tina wants to sew a piece of fabric into a scarf in the shape of an isosceles triangle, as shown in the accompanying diagram.

What are the values of x and y?

A) $x = 42$ and $y = 96$ B) $x = 69$ and $y = 69$
C) $x = 90$ and $y = 48$ D) $x = 96$ and $y = 42$

30. The coordinates of the vertices of parallelorgram *SWAN* are *S*(2,–2), *W*(–2,–4), *A*(–4,6), and *N*(0,8). State and label the coordinates of parallelogram *S"W"A"N"*, the image of *SWAN* after the transformation $T_{4,-2} \circ D_{\frac{1}{2}}$. [The use of the set of axes below is optional.]

y

x