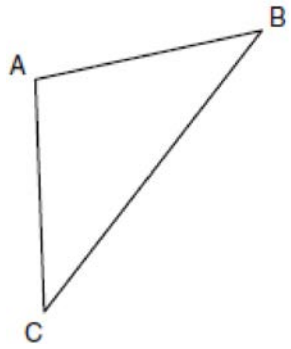
Name: _____

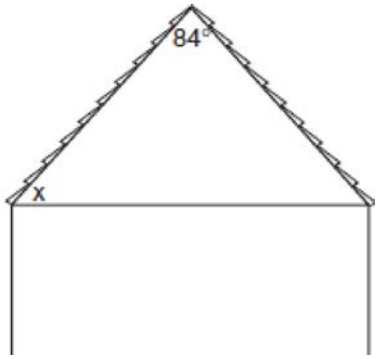
G.SRT.B.5: Isosceles Triangle Theorem 1

1 In the diagram of $\triangle ABC$ below, $\overline{AB} \cong \overline{AC}$. The measure of $\angle B$ is 40°.



What is the measure of $\angle A$?
1) 40°
2) 50°
3) 70°
4) 100°

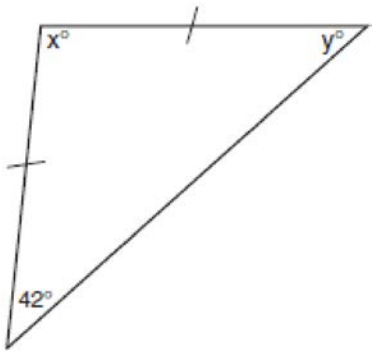
2 The accompanying diagram shows the roof of a house that is in the shape of an isosceles triangle. The vertex angle formed at the peak of the roof is 84°.



What is the measure of x?
1) 138°
2) 96°
3) 84°
4) 48°

Name: _____

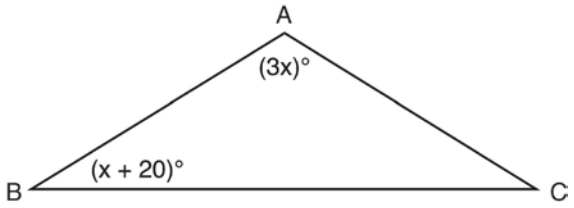
3 Tina wants to sew a piece of fabric into a scarf in the shape of an isosceles triangle, as shown in the accompanying diagram.



What are the values of x and y?

1) $x = 42$ and $y = 96$
2) $x = 69$ and $y = 69$
3) $x = 90$ and $y = 48$
4) $x = 96$ and $y = 42$

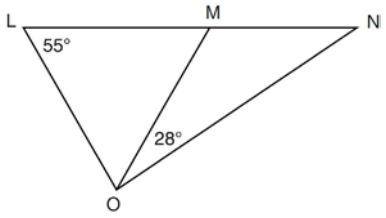
4 In the diagram below of $\triangle ABC$, $\overline{AB} \cong \overline{AC}$, $m\angle A = 3x$, and $m\angle B = x + 20$.



What is the value of x?

1) 10
2) 28
3) 32
4) 40

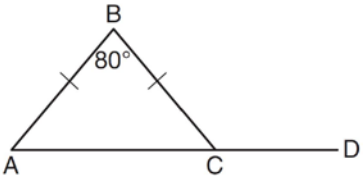
5 In the diagram below, $\triangle LMO$ is isosceles with $LO = MO$.



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

1) 27
2) 28
3) 42
4) 70

6 In the diagram below of isosceles $\triangle ABC$, the measure of vertex angle B is 80°. If $\overline{AC}$ extends to point D, what is $m\angle BCD$?



1) 50
2) 80
3) 100
4) 130

7 In $\triangle JKL$, $\overline{JL} \cong \overline{KL}$. If $m\angle J = 58$, then $m\angle L$ is

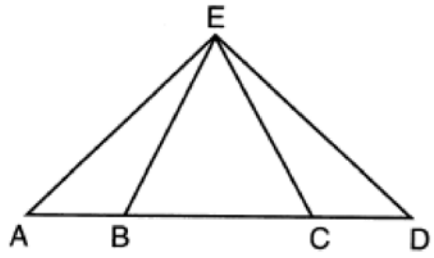
1) 61
2) 64
3) 116
4) 122

Name: _____

8 In $\triangle FGH$, $m\angle F = m\angle H$, $GF = x + 40$, $HF = 3x - 20$, and $GH = 2x + 20$. The length of $\overline{GH}$ is
1) 20
2) 40
3) 60
4) 80

9 The vertex angle of an isosceles triangle measures 15 degrees more than one of its base angles. How many degrees are there in a base angle of the triangle?
1) 50
2) 55
3) 65
4) 70

10 In the diagram below of $\triangle AED$ and $\overline{ABCD}$, $\overline{AE} \cong \overline{DE}$.



Which statement is always true?
1) $\overline{EB} \cong \overline{EC}$
2) $\overline{AC} \cong \overline{DB}$
3) $\angle EBA \cong \angle ECD$
4) $\angle EAC \cong \angle EDB$

11 In $\triangle ABC$, $\overline{AB} \cong \overline{BC}$. An altitude is drawn from B to $\overline{AC}$ and intersects $\overline{AC}$ at D. Which conclusion is *not* always true?
1) $\angle ABD \cong \angle CBD$
2) $\angle BDA \cong \angle BDC$
3) $\overline{AD} \cong \overline{BD}$
4) $\overline{AD} \cong \overline{DC}$

12 In isosceles triangle ABC, $AB = BC$. Which statement will always be true?
1) $m\angle B = m\angle A$
2) $m\angle A > m\angle B$
3) $m\angle A = m\angle C$
4) $m\angle C < m\angle B$

13 If the vertex angles of two isosceles triangles are congruent, then the triangles must be
1) acute
2) congruent
3) right
4) similar

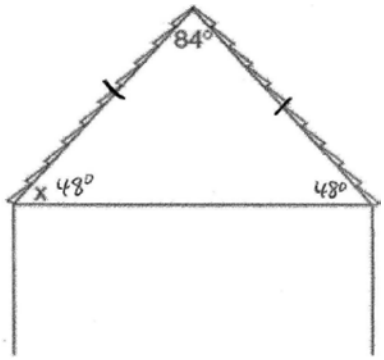
14 In isosceles triangle DOG, the measure of the vertex angle is three times the measure of one of the base angles. Which statement about $\triangle DOG$ is true?
1) $\triangle DOG$ is a scalene triangle.
2) $\triangle DOG$ is an acute triangle.
3) $\triangle DOG$ is a right triangle.
4) $\triangle DOG$ is a obtuse triangle.

G.SRT.B.5: Isosceles Triangle Theorem 1
Answer Section

1 ANS: 4
$180 - (40 + 40) = 100$

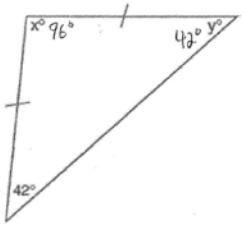
REF: 080903ge

2 ANS: 4



REF: 060615a

3 ANS: 4



REF: 060510a

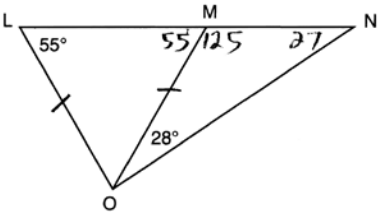
4 ANS: 2
$3x + x + 20 + x + 20 = 180$

$5x = 40$

$x = 28$

REF: 081222ge

5 ANS: 1



REF: 061211ge

6 ANS: 4

$180 - \frac{180 - 80}{2} = 130$

REF: 011508ge

7 ANS: 2

$180 - 2(58) = 64$

REF: 081510ge

8 ANS: 3

$x + 40 = 2x + 20$ $GH = 2(20) + 20 = 60$

$20 = x$

REF: 081416ge

9 ANS: 2

$x + x + x + 15 = 180$

$3x + 15 = 180$

$3x = 165$

$x = 15$

REF: 061407ge

10 ANS: 4

Isosceles triangle theorem.

REF: 062207geo

11 ANS: 3 REF: 011007ge

12 ANS: 3 REF: 061004ge

13 ANS: 4 REF: 061124ge

14 ANS: 4

$A = 3x$ $3x + x + x = 180$

$B = x$ $5x = 180$ The vertex angle is $3(36) = 108°$.

$C = x$ $x = 36$

REF: 060107a