The following are the answers or at least a type of answers since there are many ways to answer each question. Before looking at the answers, try your hardest to come up with the answer yourself. If you were unable, then look at the answer and see if the answer makes sense. If it still does not, then look again. If you are lost, look back at the relationships:

Interior angles of a triangle add up to 180°. (Interior angles of a triangle)

Interior angles of a quadrilateral add to 360°. (Interior angles of a quadrilateral)

Supplementary angles equal 180°. (Supplementary angles)

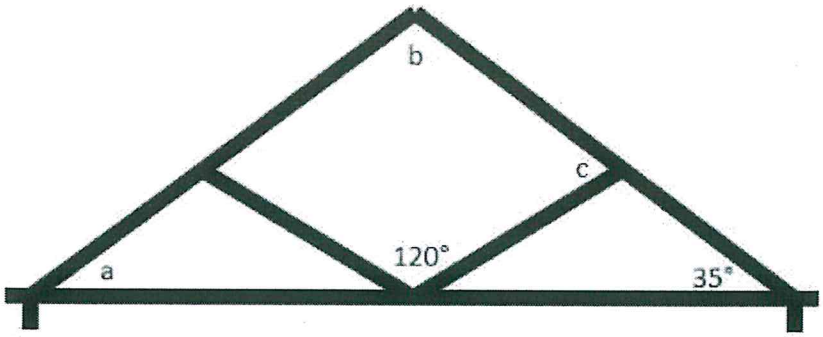
In a Transversal (a line intersecting parallel lines), there are many relationships:

Angles that are across from one another are equal (Opposite Angles)

Angles that are on the same side of the transversal and one is interior and the other is exterior are congruent (Corresponding Angles)

And so on...

Finding Angles: Example 1

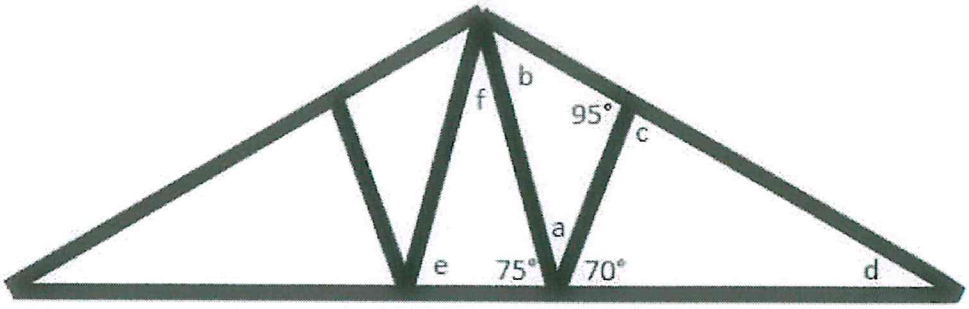


What are the measures of the angles located at positions a, b, & c? Note: the figure is symmetrical on the vertical through angle b.

ANSWERS

The large triangle is an isosceles triangle. The two angles on the base are equal.	Angle a = 35°
We now know two angles in the largest triangle. The third angle, angle b must add to these to make 180°.	35° + 35° + b = 180° b = l80° - 70° b = 110°
We now know two angles in a quadrilateral. The two unknown angles, including angle c are equal. All four angles add up to 360°.	2c + 110° + 120° = 360°2c = 360° - 230°2c = 130°c = 65°

Finding Angles: Example 2

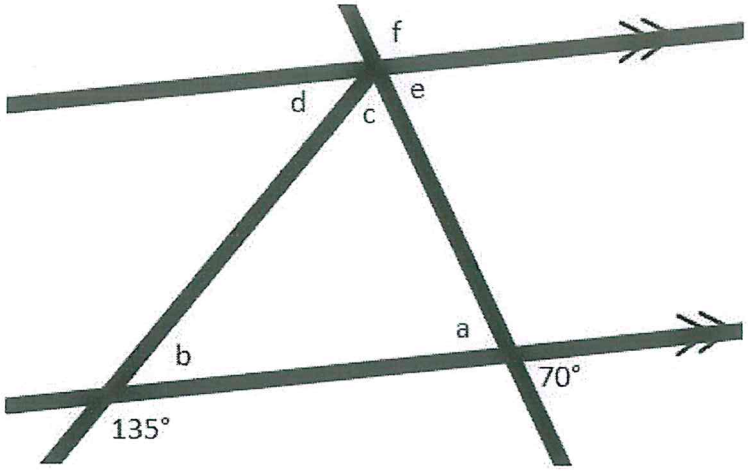


What are the measures of the angles located at positions a, b, c, d, e, & f? Note: the figure is symmetrical on the vertical through angle f.

ANSWERS

	a + 75° + 70° =
Looking along the base of the large triangle. Angle a added to 75° and 70° equals 180°.	180° a = 180° - 145° Angle a = 35°
Looking at the small triangle that includes angle b we now know that a = 35° and, since the sum of the triangles equal 180° we can find angle b.	35° + 95° + b = 180° b = 180° - 130 °b = 50°
Angle c and the 95° angle are supplementary; they add up to 180°.	c + 95° = 180°Angle c = 85°
Now we know c = 85° we can find angle d since the three angles in the triangle add up to 180°.	85° + 70 ° + d = 180°d = 180° - 155 °d = 25°
The triangle in the middle is isosceles so the angles on the base are equal and together with angle f, add up to 180°.	e = 75°75° + 75° + f = 180°f = 180° - 150°f = 30°

Finding Angles: Example 3

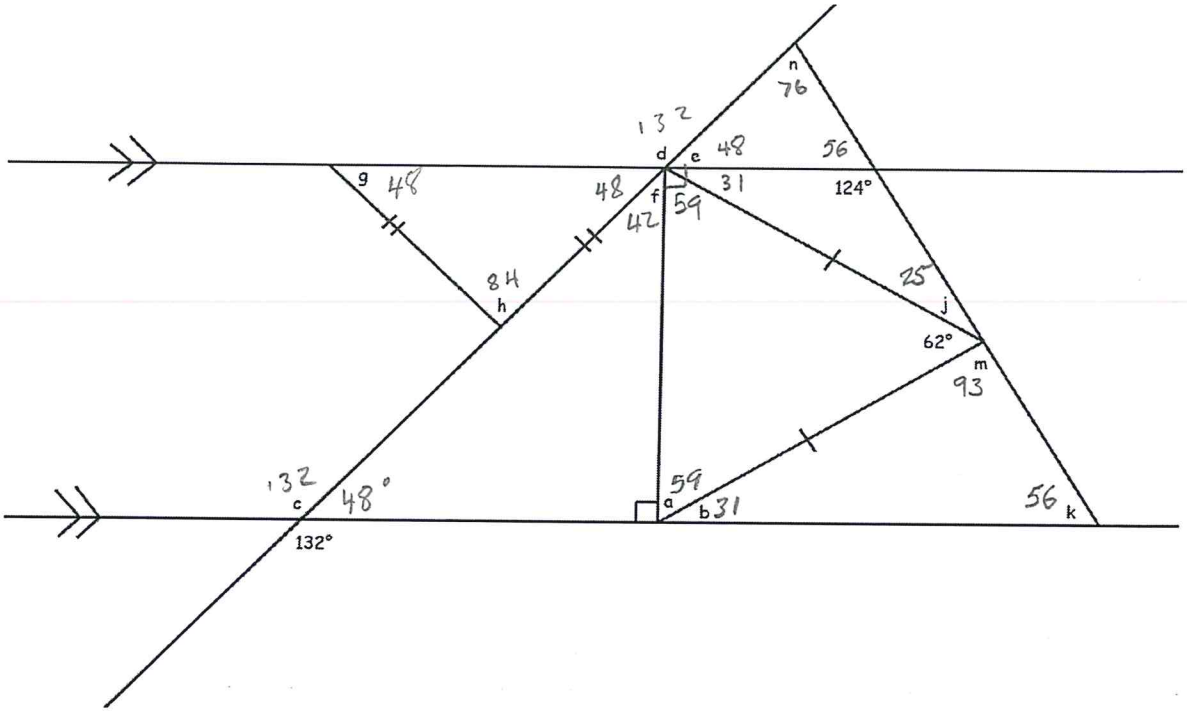


What are the measures of the angles located at positions a, b, c, d, e, & f?

ANSWERS

Angle a and the 70° angle are opposite angles so they are equal.	Angle a = 70°
Angle b and the 135° angle are supplementary so they add up to 180°.	135° + b = 180°b = 180° - 135°b = 45°
We now know two angles in a triangle. These two angles along with angle c add up to 180°.	c + 70° + 45° = 180°c = 180° - 115°c = 65°
Angles d and b are alternate angles and, since the two lines are parallel, they are equal.	d = 45°
Angle e and the 70° angle are corresponding angles and, since the two lines are parallel, they are equal.	e = 70°
Angle f and angle e are supplementary. They add up to 180°.	70° + f = 180°f = 180° - 70°f = 110°

Solve for the missing variables



a = 59° (interior angles of isosceles) b = 31° (complementary to ea) c = 132° (opposite) d = 132° (alternating Exterior) e = 48° (supplementary to ∠e) f = 42° (sup plementary to 48°+90°)

g = 48° (isosceles opposite to ∠e) h = 84° (interior angles of triangle) j = 25° (interior angles of triangle) k = 56° (interior same side) m = 93° (interior angles of triangle) n = 76° (Interior angles of triangle.)