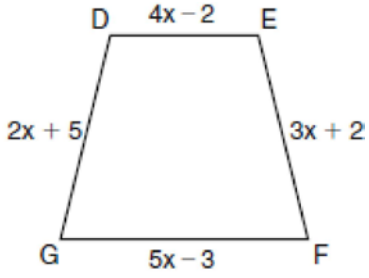
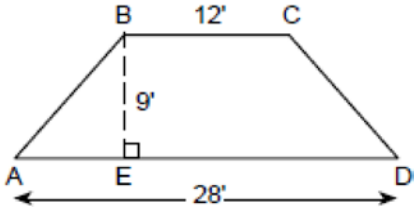
G.CO.C.11: Trapezoids 2

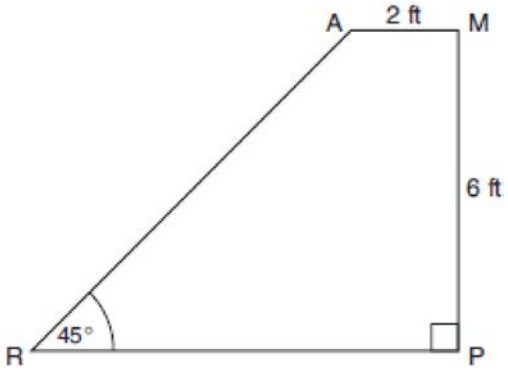
1 In the diagram below of isosceles trapezoid $DEFG$, $\overline{DE} \parallel \overline{GF}$, $DE = 4x - 2$, $EF = 3x + 2$, $FG = 5x - 3$, and $GD = 2x + 5$. Find the value of x.



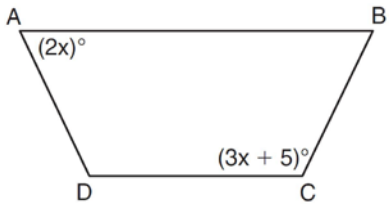
2 The cross section of an attic is in the shape of an isosceles trapezoid, as shown in the accompanying figure. If the height of the attic is 9 feet, $BC = 12$ feet, and $AD = 28$ feet, find the length of $\overline{AB}$ to the *nearest foot*.



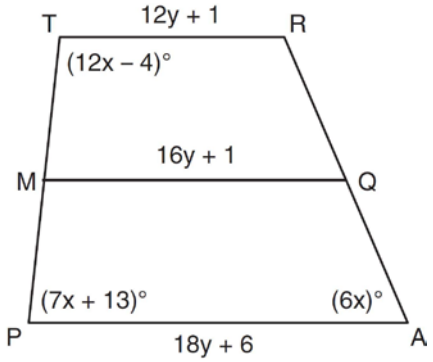
3 The accompanying diagram shows ramp $\overline{RA}$ leading to level platform $\overline{AM}$, forming an angle of 45° with level ground. If platform $\overline{AM}$ measures 2 feet and is 6 feet above the ground, explain why the exact length of ramp $\overline{RA}$ is $6\sqrt{2}$ feet.



4 The diagram below shows isosceles trapezoid $ABCD$ with $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \cong \overline{BC}$. If $m\angle BAD = 2x$ and $m\angle BCD = 3x + 5$, find $m\angle BAD$.



5 Trapezoid $TRAP$, with median $\overline{MQ}$, is shown in the diagram below. Solve algebraically for x and y.



G.CO.C.11: Trapezoids 2
Answer Section

1 ANS:
3. The non-parallel sides of an isosceles trapezoid are congruent. $2x + 5 = 3x + 2$

$$x = 3$$

REF: 080929ge

2 ANS:
12. Because the shape is an isosceles trapezoid, $\overline{AE} = \frac{28 - 12}{2} = 8$. Using Pythagoras, $8^2 + 9^2 = c^2$

$$c \approx 12$$

REF: 069933a

3 ANS:
Draw a line perpendicular to $\overline{RP}$ at T to A. $\triangle RAT$ is an isosceles right triangle with legs of 6. $6^2 + 6^2 = c^2$

$$72 = c^2$$
$$\sqrt{72} = c$$
$$6\sqrt{2} = c$$

REF: 080726b

4 ANS:
70. $3x + 5 + 3x + 5 + 2x + 2x = 180$

$$10x + 10 = 360$$
$$10x = 350$$
$$x = 35$$
$$2x = 70$$

REF: 081029ge

5 ANS:
$12x - 4 + 7x + 13 = 180$. $16y + 1 = \frac{12y + 1 + 18y + 6}{2}$

$$19x + 9 = 180 \qquad 32y + 2 = 30y + 7$$
$$19x = 171 \qquad 2y = 5$$
$$x = 9 \qquad y = \frac{5}{2}$$

REF: 081337ge