Lesson 3.1

The Tangent Ratio

Show You Know

Ex. 1	5	Ex. 2					
Calculate each trigonometric ratio.	N	Calculate each tangent ratio and angle.					
a) tan L	13 12	θ	Tan O		θ	Tan 0	
b) tan N		27°				0.5095	
	L	45°				0.5543	
		57°				1.4653	
Ex. 3		Ex. 4					
A ladder leaning against a wall forms an angle of 63° with the ground. How far up the wall will the ladder reach if the foot of the ladder is 2 m from the wall? Draw a picture to help visualize.		A radio transmission tower is to be supported by a guy wire. The wire reaches 30 m up the tower and is attached to the ground a horizontal distance of 14 m from the base of the tower. What angle does the guy wire form with the ground, to the nearest degree?					

Practice

1.

- a. If a = 10 cm and b = 12 cm, what is the value of tan A?
- b. If a = 1.9 m and b = 2.4 m, what is the value of tan B?



c. If tan A =
$$\frac{5}{6}$$
 and a = 15 cm, what is the value of b?

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2. A wheelchair ramp on a bus forms an angle of 18° with the ground. If the floor of the bus is 65 cm above the ground, how long is the horizontal base of the ramp?

3. A plane flying at an altitude of 1200 m is directly over a small island. After a few minutes, the island is sighted at an angle of 5.2° below and behind the plane. Determine the distance the plane traveled, to the nearest meter.

- 4. Different types of gravel will form different slopes when piled up. Coarse gravel can sustain an angle of 29° with the horizontal, whereas fine gravel can sustain an angle of 24°. Maria and Nathan are landscapers who need to create a circular mound 1.7 m high. To the nearest tenth of a meter, what is the minimum diameter of mound they can create using
 - a. coarse gravel?

b. fine gravel?