Math 10

Lesson 7-1 Answers

Lesson Questions

Question 1

a)

$$\tan X = \frac{6}{12} = 0.50$$

$$\tan Z = \frac{12}{6} = 2.0$$

b)

$$X = \tan^{-1}(0.5) = 26.6^{\circ}$$

$$Z = \tan^{-1}(2.0) = 63.4^{\circ}$$

Question 2

$$\tan 25 = 0.466$$

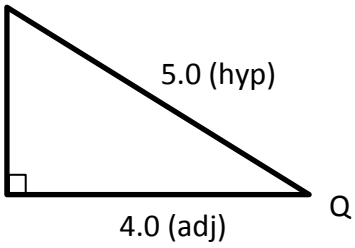
$$\tan 73 = 3.27$$

Question 3

adj and hyp → cos

$$\cos Q = \frac{\text{adj}}{\text{hyp}} = \frac{4.0}{5.0} = 0.8$$

$$Q = \cos^{-1}(0.8) = \mathbf{36.9^{\circ}}$$



Question 4

$$\sin 30 = 0.50$$

$$\cos 30 = 0.866$$

$$\tan 30 = 0.577$$

Assignment

1. a) $\tan A = \frac{6}{7}$ $\tan C = \frac{7}{6}$

   b) $\tan A = \frac{6}{7}$ $\tan C = \frac{7}{6}$

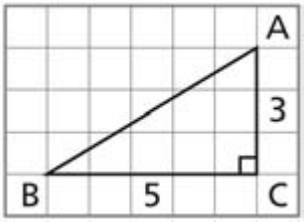
   c)

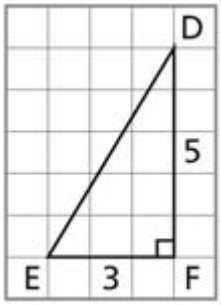
   d)

2. a) 14° b) 51°
   c) 68° d) 87°

3. a) 27° b) 45°
   c) 61° d) 69°

4. Sketches will vary. For example:

a) 

b) 

c) 

d) 

5. a) 36.4° b) 68.0°

6. a) 36.0° b) 49.1°

7. a) 11° b) 14° c) 6° d) 9°

8. 22°

9. 22°

10. 146°

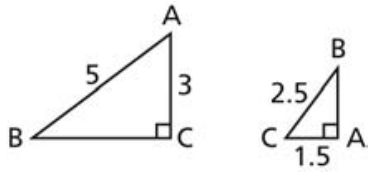
11. a) There is no least possible value; the tangent can be arbitrarily close to zero.
    b) There is no greatest possible value; the tangent can be arbitrarily large.

12. a) $1;\frac{1}{\sqrt{2}};\frac{1}{\sqrt{3}};\frac{1}{\sqrt{4}};\frac{1}{\sqrt{5}};\frac{1}{\sqrt{6}}\ldots$
    b) $\frac{1}{\sqrt{100}}$ or $\frac{1}{10}$

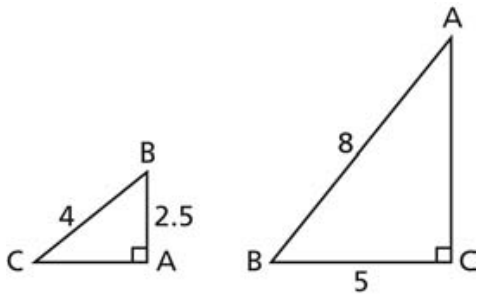
13. a) i) Opposite: GH; adjacent: AG; hypotenuse: AH
    ii) Opposite: TK; adjacent: AK; hypotenuse: AT
    b) i) sin A = 0.60; cos A = 0.80
    ii) sin A = 0.28; cos A = 0.96

14. Sketches will vary. For example:

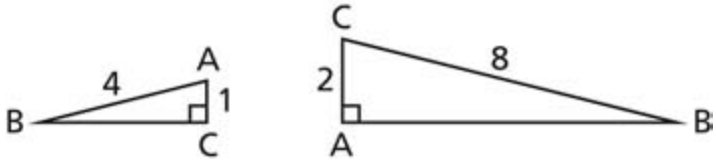
a)



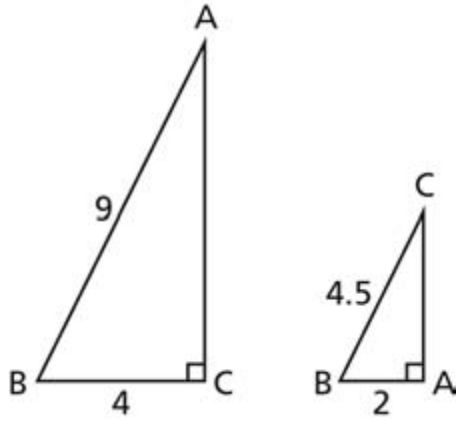
b)



c)



d)



15. a) C = 16.3°, D = 73.7°
    b) F = 63.9°, H = 26.1°
    c) J = 38.0°, K = 52.0°
    d) P = 49.3°, Q = 40.7°

16. 1.3°

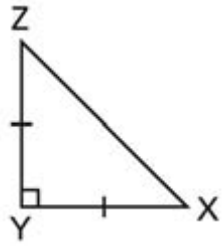
17. 79.4°

18. 61°

19. 31°

20. a) i) 0.1736… ii) 0.3420…
iii) 0.6427… iv) 0.7660…
v) 0.8660… vi) 0.9848…

21.



The opposite and adjacent sides of an acute angle have the same length, so

$$\frac{\text{opposite}}{\text{hypotenuse}} = \frac{\text{adjacent}}{\text{hypotenuse}}$$