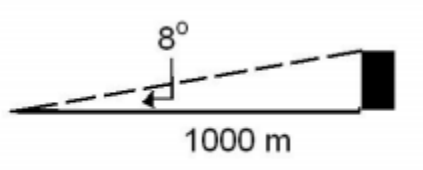
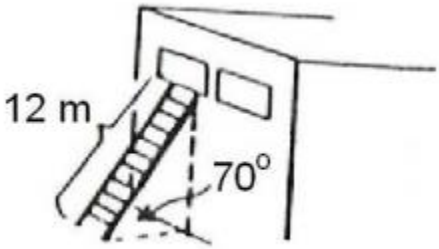
Classwork 2.10 Trigonometric Ratios- Application Problems

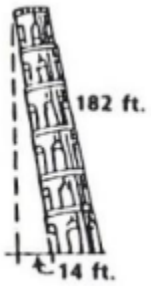
1. How tall is the building?



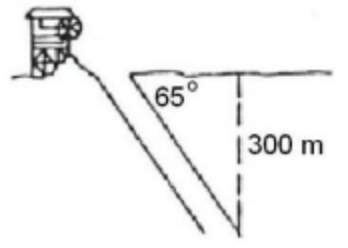
2. How far up will the ladder reach?



3. A rock dropped from the top of the Leaning Tower of Pisa falls to a point 14 feet from the base. If the tower is 182 feet tall, at what angle does it lean at the ground?

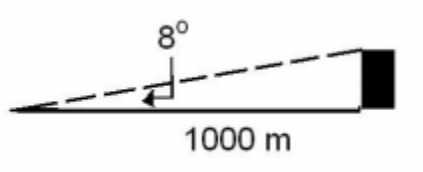


4. A mine shaft is 300 m deep and makes an angle of 65° with the horizontal ground. How long is the shaft?



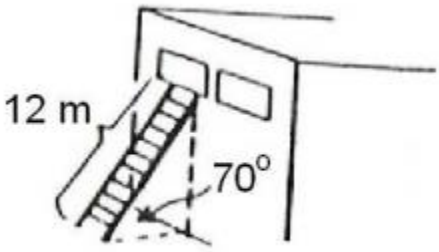
Classwork 2.10 Trigonometric Ratios- Application Problems ***Solutions***

1. How tall is the building?



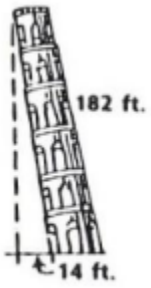
140.5 m

2. How far up will the ladder reach?



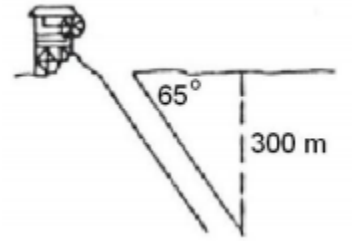
11.3 m

3. A rock dropped from the top of the Leaning Tower of Pisa falls to a point 14 feet from the base. If the tower is 182 feet tall, at what angle does it lean at the ground?



86°

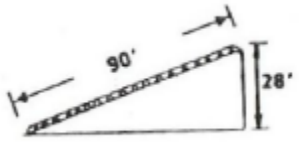
4. A mine shaft is 300 m deep and makes an angle of 65° with the horizontal ground. How long is the shaft?



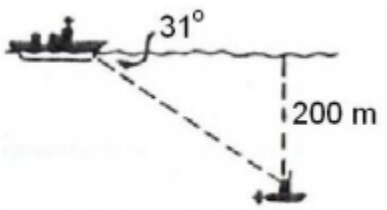
331.0 m

Classwork 2.10 Trigonometric Ratios- Application Problems

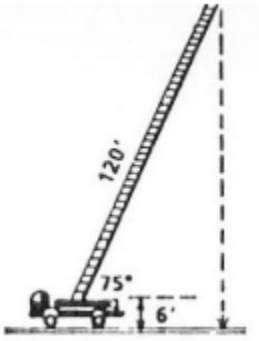
5. A 90-foot escalator rises 28 feet vertically. What is the angle that the escalator with the floor?



6. Sonar on a destroyer detects a submarine at a depth of 200m. If the angle is 31^{o}, how far apart are the two vessels?



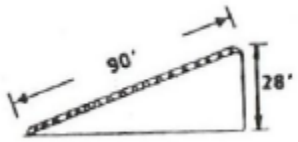
7. A ladder is mounted on a fire truck six feet above the ground? If the maximum length of the ladder is 120 feet and the maximum angle to which it can be raised is 75^{o}, how high up will it reach?



8. A bird sits on top of a lamp-post. The angle of depression from the bird to the feet of an observer standing away from the lamp-post is 35º. The distance from the bird to the observer is 25 meters. How tall is the lamp-post?

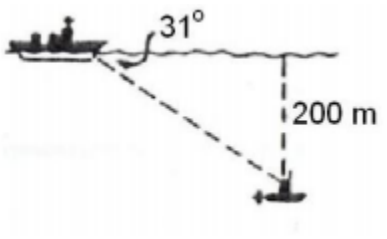
Classwork 2.10 Trigonometric Ratios- Application Problems ***Solutions***

5. A 90-foot escalator rises 28 feet vertically. What is the angle that the escalator with the floor?



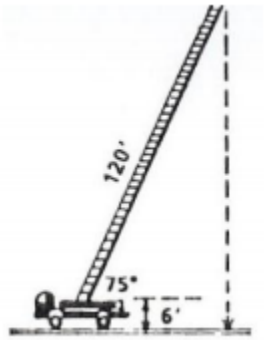
18^o

6. Sonar on a destroyer detects a submarine at a depth of 200m. If the angle is 31^o, how far apart are the two vessels?



388.3 m

7. A ladder is mounted on a fire truck six feet above the ground? If the maximum length of the ladder is 120 feet and the maximum angle to which it can be raised is 75^o, how high up will it reach?



121.9 ft.

8. A bird sits on top of a lamp-post. The angle of depression from the bird to the feet of an observer standing away from the lamp-post is 35º. The distance from the bird to the observer is 25 meters. How tall is the lamp-post?

17.5 m

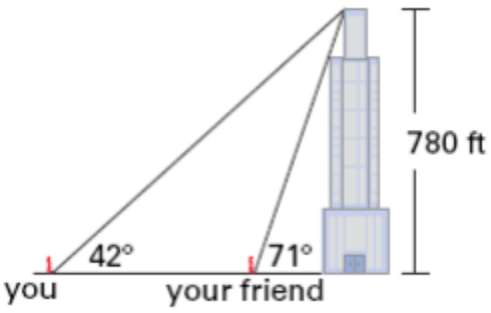
Classwork 2.10 Trigonometric Ratios- Application Problems

9. An 8 foot ladder is leaning against a wall so that the base is 5 feet from the base of the wall. What angle does the ladder make with the ground? Round to the nearest tenth.

10. A surveyor is standing 25 feet from a building and is looking at the top with an angle of elevation of 65°. How tall is the building? Round to the nearest tenth.

11. A ladder leaning against a house makes an angle of 30^{o} with the ground. The foot of the ladder is 7 feet from the house. How long is the ladder?

12. You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is 42^{o}. The angle of elevation from your friend's position to the top of the skyscraper is 71o. To the nearest foot, how far are you from your friends.



Classwork 2.10 Trigonometric Ratios- Application Problems ***Solutions***

9. An 8 foot ladder is leaning against a wall so that the base is 5 feet from the base of the wall. What angle does the ladder make with the ground? Round to the nearest tenth.

51.3 ft.

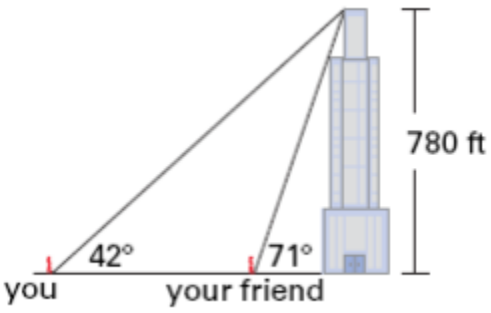
10. A surveyor is standing 25 feet from a building and is looking at the top with an angle of elevation of 65°. How tall is the building? Round to the nearest tenth.

53.6 ft.

11. A ladder leaning against a house makes an angle of 30° with the ground. The foot of the ladder is 7 feet from the house. How long is the ladder?

18.08 ft.

12. You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is 42°. The angle of elevation from your friend's position to the top of the skyscraper is 71o. To the nearest foot, how far are you from your friends.



597.7 ft.