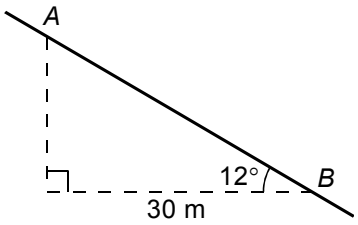
LKPF F2-WS11-Trigonometric Ratios

F.2 Mathematics Worksheet 11

Ch.11 Introduction to Trigonometric Ratios

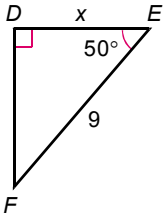
[In this exercise, give your answers correct to 3 significant figures if necessary.]

1. When moving from A to B along a slope in the figure, the horizontal distance covered is 30 m. If the angle between the slope and the horizontal is 12° and $\cos 12° = 0.9781$, find the distance between A and B on the slope.

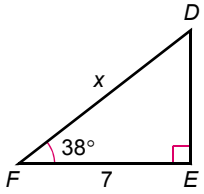


2. Find x in each of the following figures.

(a)

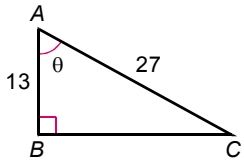


(b)

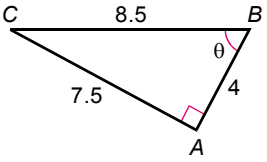


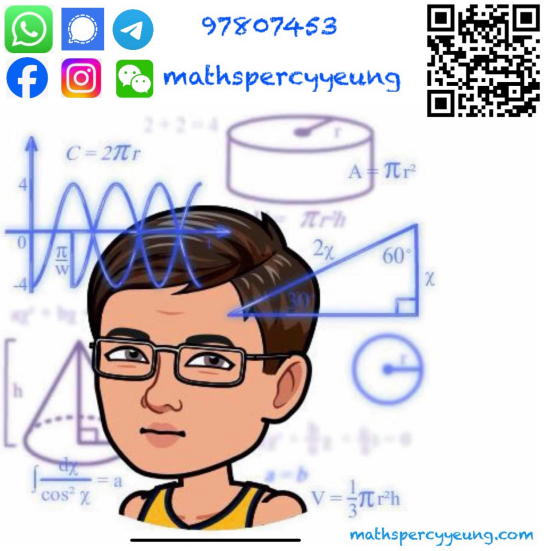
3. Find θ in each of the following figures.

(a)



(b)





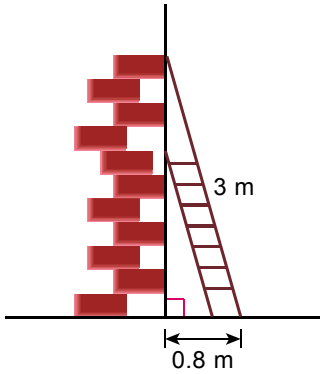
4. Find the value of each of the following.

(a) $\cos 50° - \frac{1}{4}\cos 30°$ **(b)** $\frac{\cos 15°}{5\cos 33°}$ **(c)** $\cos(20° + 53°)$

5. Find θ in each of the following.

(a) $\cos\theta = \frac{1}{3}\cos 48°$ **(b)** $\cos\theta = \frac{\cos 10°}{\cos 5°}$ **(c)** $\cos(\theta + 10°) = 0.7$

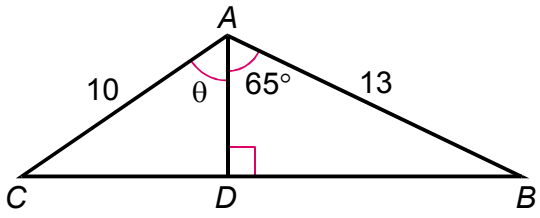
6. In the figure, a wall stands vertically on the horizontal ground. A ladder with the length of 3 m leans against the wall, where its foot is 0.8 m away from the bottom of the wall. Find the angle between the ladder and the ground.



7. In the figure, *CDB* is a straight line.

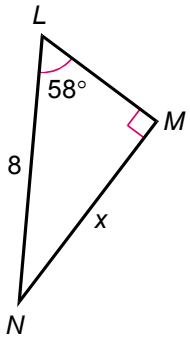
(a) Find AD .

(b) Find θ .

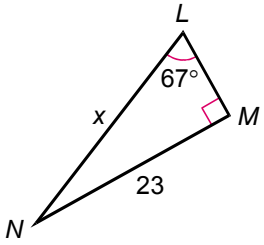


8. Find x in each of the following figures.

(a)

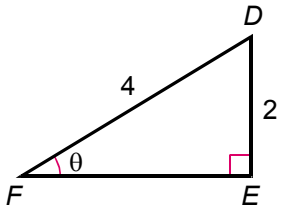


(b)

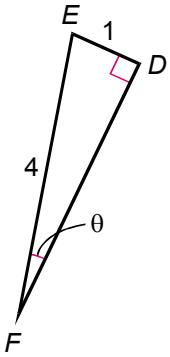


9. Find θ in each of the following figures.

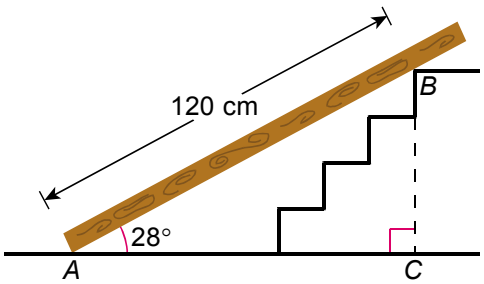
(a)



(b)



10. In the figure, the four steps of a staircase are in equal height. A wooden board leans on the staircase and makes an angle of 28° with the horizontal ground. Given that $AB = 120$ cm, find the height of each step of the staircase.



11. Find the value of each of the following.

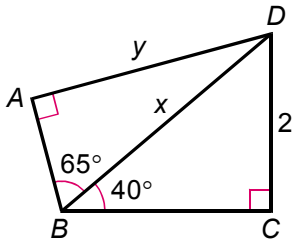
(a) $\sin 60° - \frac{1}{3}\sin 30°$ **(b)** $\frac{\sin 32°}{8\sin 4°}$ **(c)** $\sin(22.5° + 31.5°)$

12. Find θ in each of the following.

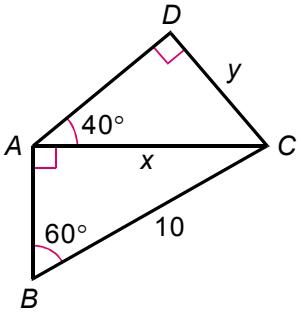
(a) $\sin\theta = \frac{\sin 60°}{\sqrt{2}}$ **(b)** $\sin\theta = \sin 60° \sin 10°$ **(c)** $\sin\theta = \frac{6\sin 20° \sin 40°}{5}$

13. Find the unknowns in each of the following figures.

(a)

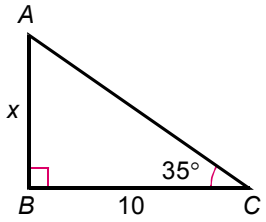


(b)

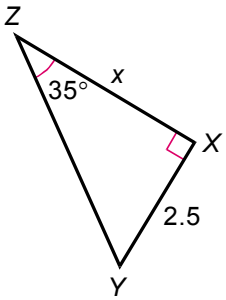


14. Find *x* in each of the following figures.

(a)

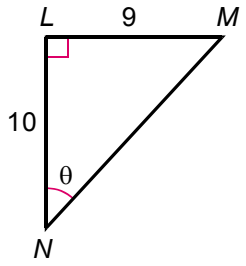


(b)

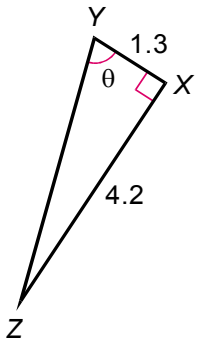


15. Find θ in each of the following figures.

(a)



(b)



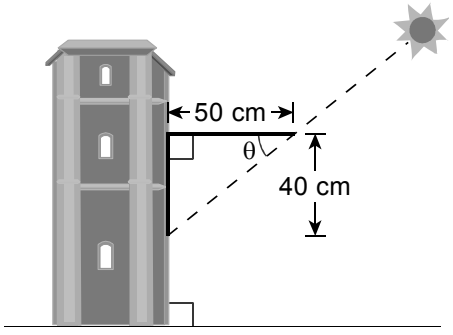
16. Find the value of each of the following.

(a) $\tan 60° - \frac{1}{3}\tan 30°$ **(b)** $\frac{\tan 21°}{7\tan 3°}$ **(c)** $\tan(72° + 13°)$

17. Find θ in each of the following.

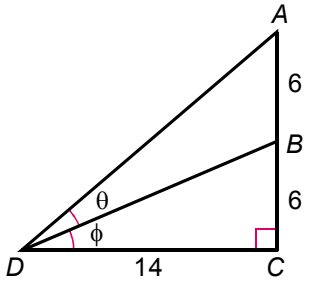
(a) $\tan\theta = \frac{\tan 10°}{\sqrt{5}}$ **(b)** $\tan\theta = 4\tan 70° - 2\tan 30°$ **(c)** $\tan\theta = \frac{2\tan 30°}{\tan 50°}$

18. In the figure, a rod with the length of 50 cm is perpendicular to the wall. The shadow of it on the wall is 40 cm long. Find the angle θ between the sunray and the wall.



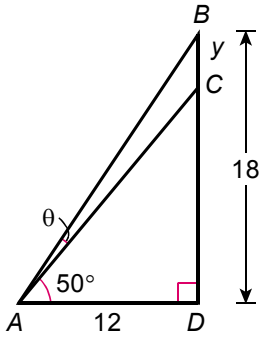
19. Find the unknowns in each of the following figures.

(a)



ABC is a straight line.

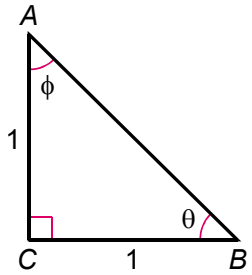
(b)



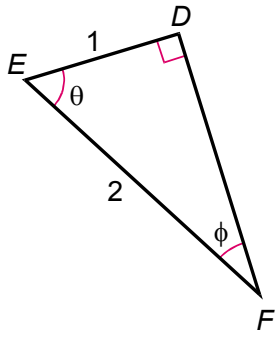
BCD is a straight line.

20. Find θ and ϕ in each of the following triangles.

(a)

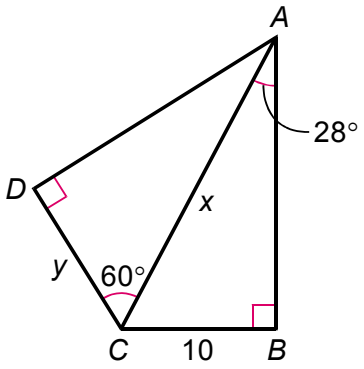


(b)

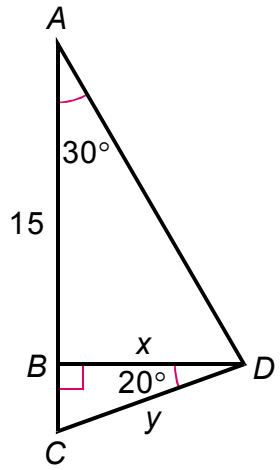


21. Find the unknowns in each of the following figures.

(a)



(b)



ABC is a straight line.

22. In the figure, BCD is a straight line.

(a) Find BC.

(b) Find AC.

(c) Find DC.

(d) Find AD.