

## units - practice problems

1. A trail sign says the lake is 3.4 km away. Convert 3.4 km to meters.

2. Convert 0.075 km to meters.

3. A lab table is listed as 820 cm long in an old inventory sheet. Convert 820 cm to meters.

4. Convert 45 mm to meters.

5. A camera flash lasts 12 ms, which is much shorter than a blink. Convert 12 ms to seconds.

6. Convert 350  $\mu\text{s}$  to seconds.

7. Red light from a small laser pointer has wavelength about 650 nm. Convert 650 nm to meters.

8. Convert 4.2 Mm to meters.

9. Convert 0.006 m to millimeters.

10. Convert 1500 m to kilometers.

11. Convert 0.0045 s to milliseconds.

12. Convert 0.000 0032 s to microseconds.

13. A sensor records 18 counts in 3.0 s. Convert the reading to meters.

14. Convert 0.75 L to cubic meters. Use  $1 \text{ L} = 0.001 \text{ m}^3$ .

15. Convert  $12 \text{ kg m/s}^2$  into the special unit abbreviation.

16. Convert 18 minutes to seconds.

17. Convert 2.5 hours to seconds.

18. Convert 5400 s to hours.

19. A car is moving 72 km/hr on a road with a 55 mph speed limit sign nearby. Convert 72 km/hr to m/s.

20. Convert 25 m/s to km/hr.

21. Convert 55 miles per hour to meters per second. Use 1 mile = 1.6 km.

22. A sprinter runs 100 m in 9.8 s. What is the sprinter's average speed in m/s and km/hr?

23. Convert 6 ft to meters. Use 1 ft = 0.3048 m.

24. Convert 30 inches to centimeters. Use 1 inch = 2.54 cm.

25. Convert 4.5 miles to kilometers. Use 1 mile = 1.6 km.

26. Convert 5 yards to meters. Use 1 yard = 0.914 m.

27. You walk 6 m east and then 8 m north. How far are you from where you started?

28. You walk 10 m north and then 10 m east. How far are you from where you started?

29. A plane is moving 20 m/s at  $30^\circ$  above the horizontal. How fast is it moving vertically?

30. A plane is moving 20 m/s at  $30^\circ$  above the horizontal. How fast is it moving horizontally?

31. You walk 50 m northeast. How far north and how far east did you walk?

32. A displacement is 120 m at  $60^\circ$  above the x-axis. Find the x and y components.

33. A vector has an x-component of 12 m and a y-component of 5 m. What is the vector's magnitude?

34. A plane is moving 250 m/s at  $40^\circ$  above the horizontal. How fast is it moving vertically?

35. A long spacecraft tracking distance is written as  $2.4 \times 10^6$  m. Convert it to megameters.