



Physics: Units, Measurement, and Vectors Practice



Hey Tyler! This worksheet was made just for you.

Directions: Answer each question using SI units, unit conversions, and vector ideas. Show your work for calculations and write each final answer clearly on the line.

Example: A work truck travels at 54 km/h toward a job site. Convert this velocity to m/s.

Use $1 \text{ km/h} = 1000 \text{ m} / 3600 \text{ s}$.

$54 \text{ km/h} = 54 \times (1000/3600) \text{ m/s}$

$54 \times 1000 = 54000$

$54000 \div 3600 = 15$

So the velocity is 15 m/s toward the job site.

1. Convert 90 km/h to m/s.
2. Convert 18 m/s to km/h.
3. An electrician walks 12 m east across a site. Is this quantity a scalar or a vector?
4. A spool of wire has a length of 25 m. Is this quantity a scalar or a vector?
5. A service cart moves at 8 m/s north. What physics term names a speed with a stated direction of motion?
6. A force vector has magnitude 40 N at 30° above the horizontal. Find the horizontal component.
7. A force vector has magnitude 40 N at 30° above the horizontal. Find the vertical component.
8. Yes or No: The magnitude of a vector is its size or amount.
9. Yes or No: To convert a measurement means to change it from one unit system to another.
10. Two displacement vectors act along the same line: 6 m east and 4 m east. Find the resultant.
11. Two displacement vectors act along the same line: 9 m east and 5 m west. Find the resultant.
12. Tyler rolls a tool cart 3 m/s south through the shop. Write the magnitude and direction of this vector.

Physics: Units, Measurement, and Vectors Practice — Answer Key

Example: Example: A work truck travels at 54 km/h toward a job site. Convert this velocity to m/s. Use $1 \text{ km/h} = 1000 \text{ m} / 3600 \text{ s}$.

$$54 \text{ km/h} = 54 \times (1000/3600) \text{ m/s}$$

$$54 \times 1000 = 54000$$

$$54000 \div 3600 = 15$$

So the velocity is 15 m/s toward the job site.

1. Convert 90 km/h to m/s. → 25 m/s
2. Convert 18 m/s to km/h. → 64.8 km/h
3. An electrician walks 12 m east across a site. Is this quantity a scalar or a vector? → vector
4. A spool of wire has a length of 25 m. Is this quantity a scalar or a vector? → scalar
5. A service cart moves at 8 m/s north. What physics term names a speed with a stated direction of motion? → velocity
6. A force vector has magnitude 40 N at 30° above the horizontal. Find the horizontal component. → $20\sqrt{3} \text{ N}$
7. A force vector has magnitude 40 N at 30° above the horizontal. Find the vertical component. → 20 N
8. Yes or No: The magnitude of a vector is its size or amount. → Yes
9. Yes or No: To convert a measurement means to change it from one unit system to another. → Yes
10. Two displacement vectors act along the same line: 6 m east and 4 m east. Find the resultant. → 10 m east
11. Two displacement vectors act along the same line: 9 m east and 5 m west. Find the resultant. → 4 m east
12. Tyler rolls a tool cart 3 m/s south through the shop. Write the magnitude and direction of this vector. → Magnitude: 3 m/s; direction: south