b) $v = \dfrac{(11\text{m} + (-25\text{m}))}{52\text{s}}$

$= -0.27$ m/s or 0.27 m/s south

Lesson 2–Uniform Motion

1. $v = \dfrac{d}{t}$

$= \dfrac{1.00 \times 10^2 \text{ m}}{11.2 \text{ s}}$

$= 8.93$ m/s west

2. a) $v = \dfrac{d}{t}$

$d = vt$

$= (10.0 \text{ m/s})(4.5 \text{ s})$

$= 45$ m

b) 45 m west

3. $v = \dfrac{d}{t}$

$t = \dfrac{d}{v}$

$= \dfrac{2.5 \text{ m}}{9.8 \text{ m/s}}$

$= 0.26$ s

4. 1st part of the motion

$v = \dfrac{d}{t}$

$d = vt$

$= (1.30 \text{ m/s})(98.0 \text{ s})$

$= 127$ m south

2nd part of the motion

$d = vt$

$= (0.45 \text{ m/s})(90.0 \text{ s})$

$= 41$ m south

Total: 41 m south + 27 m south = 168 m south

$v = \dfrac{d}{t}$

$= \dfrac{168 \text{ m}}{188 \text{ s}}$

$= 0.893$ m/s south

5. $v = \dfrac{d}{t}$

$= \dfrac{64.0 \text{ m}}{3.61 \text{ s}}$

$= 17.7$ m/s down

6. Velocity is the slope of the graph

$\text{slope} = \dfrac{\text{rise}}{\text{run}}$

$= \dfrac{(10.0 - 0) \text{ m}}{(15.0 - 0) \text{ s}}$

$= 0.667$ m/s east

Because the slope is constant, the velocity at
a) 8.0 s,
b) 12.0 s, and
c) 1.0 s is the same at 0.667 m/s east.

7. Both speed and velocity are equal to the slope of the graph.

$\text{slope} = \dfrac{\text{rise}}{\text{run}}$

$= \dfrac{(8.0 - 0) \text{ m}}{(8.0 - 0) \text{ s}}$

$= 1.0$ m/s

a) speed = 1.0 m/s

b) velocity = 1.0 m/s north

8. Both the displacement and distance are found by determining the area under the graph.

area $= l \times w$

$= (10.0 \text{ s})(7.0 \text{ m/s})$

$= 7.0 \times 101$ m

a) displacement $= 7.0 \times 10^1$ m south

b) distance $= 7.0 \times 10^1$ m

9. Both the displacement and distance are found by determining the area under the graph.

area $= l \times w$

$= (5.0 \text{ s})(2.5 \text{ m})$

$= 13$ m

a) displacement = 13 m west

b) distance = 13 m