



S10 Unit B: Scalars, Vectors and Uniform Motion

Name: Key!Date: Nov 12 / 13

1a) Define vector and give an example:

Quantities with magnitude & direction.
 ex.) velocity, displacement

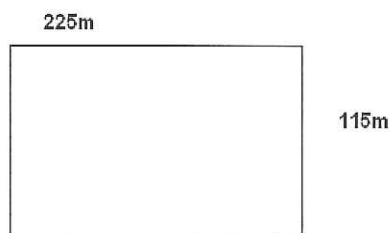
b) Define scalar and give an example:

Quantities with ~~a~~ magnitude only.
 ex.) speed, distance, time

2. A camel walks through the desert 275m east and then turns around and walks 425m west.

a) What is the distance the camel travels? $275\text{m} + 425\text{m} = \underline{700\text{m}}$ b) What is the displacement of the camel? $+275\text{m} + (-425\text{m}) = \underline{-150\text{m}}$ or $\underline{150\text{m W}}$

3. A chimpanzee goes for a walk around the block as described below.



a. What is the distance covered by the chimpanzee?

$$225\text{m} + 115\text{m} + 225\text{m} + 115\text{m} = \underline{680\text{m}}$$

b. What is the displacement of the chimpanzee?

$$225\text{m} - 115\text{m} - 225\text{m} + 115\text{m} = \underline{0\text{m}}$$

4. A boy is jumping on a trampoline. He makes three jumps: the first 3.0 m in the air, the second 2.0 m in the air, and the last 1.0 m in the air.

a) What is the boy's displacement traveled?

$$3\text{m} + (-3\text{m}) + 2\text{m} + (-2\text{m}) + 1\text{m} + (-1\text{m}) = \underline{0\text{m}}$$

b) What is the boy's distance traveled?

$$3\text{m} + 3\text{m} + 2\text{m} + 2\text{m} + 1\text{m} + 1\text{m} = \underline{12\text{m}}$$

5. LD the Tiger walks 100 m in 50.0 s. What is his average speed in m/s?

$d = 100\text{m}$ $t = 50\text{s}$ $v = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$v = \frac{(100\text{m})}{(50\text{s})} = \underline{\underline{2.00\text{m/s}}}$ <i>substitution (with units) and algebra</i>
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6. LD rides his bike from Lethbridge to Calgary a distance of 250 km without stopping. The trip takes him 10.0 h. What was his average speed in km/h?

$d = 250\text{km}$ $t = 10\text{h}$ $v = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$v = \frac{250\text{km}}{10\text{h}} = \underline{\underline{25.0\text{km/h}}}$ <i>substitution (with units) and algebra</i>
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7. LD the fish swims in a straight line for a distance of 700 m for 50.0 min. What was LD's speed in m/s?

$d = 700\text{m}$ $t = 50\text{min}$ $\times 60\text{s/min}$ $= 3000\text{s}$ $v = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$v = \frac{700\text{m}}{3000\text{s}} = \underline{\underline{0.233\text{m/s}}}$ <i>substitution (with units) and algebra</i>
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8. LD walks at a constant speed of 2.00 m/s for a period of 3.00 min. in search of hamburgers. If he walks in a straight line how far did he travel?

$v = 2\text{m/s}$ $t = 3\text{min}$ $\times 60\text{s/min}$ $\underline{\quad}$ 180s $d = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$(2\text{m/s}) = \frac{d}{(180\text{s})}$ $\underline{\underline{d = (2\text{m/s})(180\text{s}) = d = 360\text{m}}}$ <i>substitution (with units) and algebra</i>
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10/30/2013

9. A roadrunner runs away from Wiley LD at a uniform speed of 1.25 m/s for 245 s. What distance did the roadrunner cover?

$v = 1.25 \text{ m/s}$ $t = 245 \text{ s}$ $d = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$1.25 \text{ m/s} = \frac{d}{245 \text{ s}}$ $(1.25 \text{ m/s})(245 \text{ s}) = d = \underline{\underline{306.25 \text{ m}}}$ <i>substitution (with units) and algebra</i>
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10. Lightning LD drives from Grand Prairie to Thorhild, a distance of 320 km. If he drives at a constant speed of 80 km/h, how long will it take?

$v = 80 \text{ km/h}$ $d = 320 \text{ km}$ $t = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$80 \text{ km/h} = \frac{320 \text{ km}}{t}$ $t = \frac{320 \text{ km}}{80 \text{ km/h}} = \underline{\underline{4.0 \text{ h}}}$ <i>substitution (with units) and algebra</i>
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10. LD Potter flies a distance of 1300 km at a constant speed of 652 km/h. How much time will this take?

$v = 652 \text{ km/h}$ $d = 1300 \text{ km}$ $t = ?$ <i>variables list</i>	$v = \frac{d}{t}$ <i>formula</i>	$652 \text{ km/h} = \frac{1300 \text{ km}}{t}$ $t = \frac{1300 \text{ km}}{652 \text{ km/h}} = \underline{\underline{1.99 \text{ h}}}$ <i>substitution (with units) and algebra</i>
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