Algebra 1 Bellwork Monday, February 22, 2016

1. You start a business that manufactures and sells space heaters. The building and machinery cost $550,000. Each month you pay $2700 for utilities, insurance, and taxes. Your payroll each month is $10,500. You sell your space heaters for $120 each and your monthly sales average 350 space heaters.

Find the break-even point.

. Your boat can travel 12mph in calm water. Today you took your boat to a river that has a current of 4 mph.

a) How long would it take you to travel 9 miles upstream?

b) How long would it take you to return?

3. Your plane can fly 180 mph with no wind. Today there is a 25 mph wind.

a) How far can you travel in 4 hours if you fly with a tailwind?

b) How long would it take you to return?

Algebra 1 Bellwork Monday, February 22, 2016 Answers

1. You start a business that manufactures and sells space heaters. The building and machinery cost $550,000. Each month you pay $2700 for utilities, insurance, and taxes. Your payroll each month is $10,500. You sell your space heaters for $120 each and your monthly sales average 350 space heaters.

Find the break-even point. 20 months

Expenses: $550{,}000 + 2700m + 10{,}500m$ Income: $(350m)(120)$

$550{,}000 = 28{,}800m$

$\frac{550{,}000}{28{,}800} = \frac{28{,}800m}{28{,}800}$

$m = 19.097$

$550{,}000 + 13{,}200m = 42{,}000m$

2. Your boat can travel 12mph in calm water. Today you took your boat to a river that has a current of 4 mph.

a) How long would it take you to travel 9 miles upstream?

$r =$ boat speed $-$ current speed

$r = 12\text{mph} - 4\text{mph} = 8\text{mph}$

$9\text{mi} = 8\text{mph} \cdot t$

$t = 1.125$ hrs

b) How long would it take you to return?

$r =$ boat speed + current speed

$r = 12\text{mph} + 4\text{mph} = 16\text{mph}$

$9\text{mi} = 16\text{mph} \cdot t$

$t = .5625$ hrs

3. Your plane can fly 180 mph with no wind. Today there is a 25 mph wind.

a) How far can you travel in 4 hours if you fly with a tailwind?

$r =$ plane speed + wind speed

$r = 180\text{mph} + 25\text{mph}$

$r = 205\text{mph}$

$d = (205\text{mph})(4\text{hr}) =$ 820 miles

b) How long would it take you to return?

$r =$ plane speed $-$ wind speed

$= 180\text{mph} - 25\text{mph}$

$= 155\text{mph}$

$820\text{mi} = 155\text{mph} \cdot t$

$t = 5.29$ hrs