

Algebra 1 Bellwork Thursday, January 29, 2015

1. A plane flies round-trip between two cities that are 1200 miles apart. One of the directions takes 4.8 hours because the plane is flying with a tailwind. The other direction takes 6 hours because the plane is flying against a headwind. Write and solve a system of equations to find the speed of the plane and the speed of the wind.

Plane speed =

Wind speed =

2. You use your boat on a nearby river to make two trips. You travel downstream 13.5 miles in 1.8 hours. You turn around and travel upstream 7.26 miles in 2.2 hours. Write and solve a system of equations to find the speed of the boat and the speed of the current in the river.

Boat speed =

Current speed =

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ANSWERS

1. A plane flies round-trip between two cities that are 1200 miles apart. One of the directions takes 4.8 hours because the plane is flying with a tailwind. The other direction takes 6 hours because the plane is flying against a headwind. Write and solve a system of equations to find the speed of the plane and the speed of the wind.

$P \rightarrow$ Plane speed = 225 mph

$W \rightarrow$ Wind speed = 25 mph

$$\begin{aligned} (P+W)4.8 &= 1200 && \text{TAILWIND} \\ (P-W)6 &= 1200 \\ \swarrow & \searrow \\ P+W &= 250 \\ + \quad P-W &= 200 \\ \hline 2P &= 450 \\ P &= 225 \end{aligned}$$

$$\begin{aligned} P+W &= 250 \\ 225+W &= 250 \rightarrow W=25 \end{aligned}$$

2. You use your boat on a nearby river to make two trips. You travel downstream 13.5 miles in 1.8 hours. You turn around and travel upstream 7.26 miles in 2.2 hours. Write and solve a system of equations to find the speed of the boat and the speed of the current in the river.

$b \rightarrow$ Boat speed = 5.4 mph

$c \rightarrow$ Current speed = 2.1 mph

$$\begin{aligned} (b+c)1.8 &= 13.5 && \text{downstream} \\ (b-c)2.2 &= 7.26 && \text{upstream} \\ \swarrow & \searrow \\ b+c &= 7.5 \\ + \quad b-c &= 3.3 \\ \hline 2b &= 10.8 \\ b &= 5.4 \end{aligned}$$

$$\begin{aligned} b+c &= 7.5 \\ 5.4+c &= 7.5 \\ c &= 2.1 \end{aligned}$$