Math Problem Set 4

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#1 Points possible: 10. Total attempts: 1

Combine and simplify:

$$\frac{-1}{x-2}+\frac{4}{x+1}$$

- ○ $\frac{3}{(x-2)(x+1)}$
- ○ $\frac{3x-9}{(x-2)(x+1)}$
- ○ $\frac{3}{2x-1}$
- ○ $\frac{3x+6}{(x-2)(x+1)}$

$\frac{3x-9}{(x-2)(x+1)}$

#2 Points possible: 10. Total attempts: 1

Solve for x

$$\frac{x+5}{x}-\frac{3}{7}=\frac{2}{x}$$

$x =$ ____________

-5.25

#3 Points possible: 10. Total attempts: 1

Solve for x

$$\frac{x-1}{x}+\frac{1}{2}=\frac{-4}{x}$$

$x =$ ____________

-2

#4 Points possible: 10. Total attempts: 1

The sum of the reciprocal of a positive number and the reciprocal of 3 more than the number is $\frac{7}{10}$. Find the number.

Write an equation with the following characteristics:
1. It uses x to represent the number.
2. It uses the information as it is given above.
3. It can be solved to answer the question.
Equation: ____________

The number is ____________

$\frac{1}{x}+\frac{1}{x+3}=7/10$

2

#5 Points possible: 10. Total attempts: 1

The Doppler effect causes a sound moving towards you to sound higher pitched and a sound moving away from you to sound lower pitched, like observed in listening to the car horn in the video.

The equation for this is $f = \left(\frac{c}{c+v}\right) f_0$, where
f is the observed frequency (pitch) of the sound, in Hertz
c is the speed of sound, about 761 miles per hour,
v is the speed of the sound source, in this case the car, in miles per hour
f_0 is the frequency of the sound when stationary

Using a spectrum analyzer, we could determine the observed frequency when the car was driving towards us was 270 Hz and the frequency while driving away was 240 Hz, suggesting a stationary frequency of 255 Hz.

Use this information and the equation to estimate the speed of the car in miles/hour, to 1 decimal place.

________________ mi/hr
47.56

#6 Points possible: 10. Total attempts: 1

A chemist has in a beaker 90 mL of solution consisting of 30% acid.

a. Write an equation for the concentration of acid in the solution after adding x mL of pure water.

Concentration = ________________

b. Use that equation to determine how many mL of water should be added to obtain a 9% solution. Round your answer to 1 decimal place.

________________ mL

$\frac{27}{90 + x}$
210

#7 Points possible: 10. Total attempts: 1

A plane can fly 960 miles in the same time as it takes a car to go 180 miles. If the car travels 130 mph slower than the plane, find the speed of the plane.

________________ mph
160

#8 Points possible: 10. Total attempts: 1

A woman can bicycle 104 miles in the same time as it takes her to walk 24 miles. She can ride 10 mph faster than she can walk. How fast can she walk?

Using r as your variable to represent the rate at which she walks, write an equation using the information as it is given above that can be used to solve this problem.
Equation: ____________________

She walks ________ mph
$\frac{24}{r} = \frac{104}{r + 10}$
3

#9 Points possible: 10. Total attempts: 1

A plane can fly 640 miles in the same time as it takes a car to go 200 miles. If the car travels 110 mph slower than the plane, find the speed of the plane.

Using r as your variable to represent the speed of the plane in miles per hour, write an equation using the information above that can be solved to find the answer to this problem.
Equation: ____________________

The plane flies ________ mph

$$\frac{640}{r} = \frac{200}{r-110}$$

160

#10 Points possible: 10. Total attempts: 1

Antonio can paddle his kayak 7 miles per hour in still water. It takes him as long to paddle 16 miles upstream as it takes him to travel 40 miles downstream. Determine the speed of the river's current.

Enter an equation with the following properties:
1. It uses the variable c to represent the speed of the river's current in miles per hour.
2. It uses the information as it is given above.
3. It can be solved to answer the question.
Equation: ____________________

How fast is the river's current? ________ miles per hour

$$\frac{16}{7-c} = \frac{40}{7+c}$$

3

#11 Points possible: 10. Total attempts: 1

A boat, which moves at 31 miles per hour in water without a current, goes 945 miles upstream and 945 miles back again in 62 hours. Find the speed of the current **to the nearest tenth**.

The speed of the current is __________ miles per hour.

4

#12 Points possible: 10. Total attempts: 1

Elizabeth drives to the beach, which is 32 miles away. One the way back, due to road construction she had to drive 6 mph slower, thus the return trip took 2 hours longer. Which of the following equations would be used to find the rate at which Elizabeth drove to the beach? Pick two.

- ☐ $vt = (2)(32)$
- ☐ $vt = 32$
- ☐ $(v+6)(t-2) = 32$
- ☐ $(v-6)(t+2) = 32$
- ☐ $(v+6)(t+2) = 32$
- ☐ $(v-6)(t-2) = 32$

$vt = 32$
$(v-6)(t+2) = 32$

#13 Points possible: 10. Total attempts: 1

Derek went on a bike ride. After 6 miles he got a flat tire and had to jog back home. He jogs 3 mph slower than he bikes, so the jog took 1 hour longer than the bike ride. At what rate did he travel each way?

On the bike, Derek went _____ mph

Jogging back he went _____ mph
6
3

#14 Points possible: 10. Total attempts: 1

By checking work records, a carpenter finds that Juanita can build a small shed in 15 hours. Anton can do the same job in 21 hours. How long would it take to build 7 sheds if they worked together?

It will take them _____ hour(s) _____ minute(s) to build 7 sheds together.

If needed, round answer to 1 decimal places.
61
15

#15 Points possible: 10. Total attempts: 1

Christy can do a job in 9 hours less than Tony can. If they work together they can get the job done in 6 hours. How long would it take each to do the job alone?

Christy can do the job in _____ hours

Tony can do the job in _____ hours
9
18