Set up the equation and solve.

1. A worker's take-home pay is \$492, after deductions totaling 40% of the gross pay have been subtracted. What is the gross pay?

Gross pay -deductions = Net pay (take home)
$$X - .40x = 492$$

$$.60x = 492$$

$$.60$$

$$x = 492$$

$$.60$$

$$x = 492$$

$$x = 4820$$

$$x = 4820$$

2. A workman's basic hourly wage is \$10, but he receives one and a half times his hourly rate for any hours worked in excess of 40 per week. If his paycheck for the week is \$595, how many hours of overtime did he work?

$$1.5 \times 10 = 15$$

$$40(10) + 4(15) = 595$$

$$400 + 15x = 595$$

$$\frac{15x = 195}{15} \quad (x = 13)$$

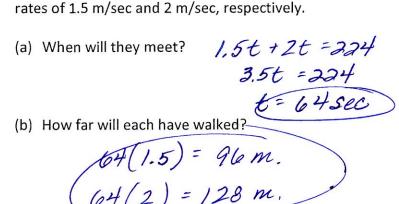
3. Six hundred people attended the premiere of a motion picture. Adult tickets cost \$5, and children were admitted for \$2. If box office receipts totaled \$2400, how many children attended the premiere? (Oh Slaver)

premiere? (children) (adults)

$$f(2) + (600-x)(5) = 2400$$

 $2x + 3000-5x = 3400$
 $-3x = -600$
 $-3 = -3$
 $x = -3$

4. A pharmacist is to prepare 15 mL of special eye drops for a glaucoma patient. The eye-drop solution must have a 2% active ingredient, but the pharmacist only has 10% solution and 1% solution in stock. How much of each type of solution should be used to fill the prescription?



6. Two children own two-way radios that have a maximum range of 2 miles. One leaves a certain point at 1:00 P.M., walking due north at a rate of 4 mi/hr. The other leaves the same point at 1:15 P.M., traveling due south at 6 mi/hr. When will they be unable to communicate with one another?

5. Two children, who are 224 meters apart, start walking toward each other at the same instant at

$$H(t+.35) + 6t = 3$$

$$F(t) + (t = d), \qquad 1:15$$

$$+:06$$

$$H(t+1) + 6t = 2 \qquad after 1:21 p.m.$$

$$10t = 1 \qquad t = \frac{1}{10} \text{ hr or } 6\text{ min.}$$

$$1:15 \qquad \text{ed horizontally at a target, and the sound of its impact is heard 1.5 seconds later. If the bullet is 3300 ft/sec and the speed of sound is 1100 ft/sec, how far away is the$$

7. A bullet is fired horizontally at a target, and the sound of its impact is heard 1.5 seconds later. If the speed of the bullet is 3300 ft/sec and the speed of sound is 1100 ft/sec, how far away is the target?

reverses direction and runs due south at a 7-minute-mile pace. If she returns to her starting point at 3:45 P.M., find the total number of miles run.

r.t=d Minutes + Minutes = Minutes to be 1

$$\frac{1}{6} \text{ miles/minute}.$$

$$\frac{1}{6} \text{ miles/min$$

Y-t=d

$$\frac{X}{\frac{1}{6}} + \frac{X}{\frac{1}{7}} = 45$$

$$\frac{13X = 45}{13} \quad D = 3.45 \frac{90}{13} \text{ mi.}$$

$$6X + 7X = 45$$

$$X = \frac{45}{13}.$$

$$6X = \frac{45}{13}.$$

9. With water from one hose, a swimming pool can be filled in 8 hours. A second, larger hose used alone can fill the pool in 5 hours. How long would it take to fill the pool if both hoses were used simultaneously? (Use hourly rates)

$$\Psi \left(\frac{1}{8} + \frac{1}{5} = \frac{1}{x} \right)$$

$$5 + 8 = \frac{40}{x}$$

$$13 = \frac{40}{x}; \quad x = \frac{40}{13} \text{ or } 3\frac{1}{13} \text{ hours}$$

10. A college student has finished 48 credit hours with a GPA of 2.75. To get into the program she wishes to enter, she must have a GPA of 3.2. How many additional credit hours of 4.0 work will raise her GPA to 3.2?

$$GPA = total weighted honor pts.$$

$$total credit hours$$

$$3.2 = 48(2.75) + 4(4.0)$$

$$48 + 4$$

$$153.6 + 3.24 = 132 + 4x$$

$$21.6 = .8x$$

$$x = 27 credit hours$$