

Week 5 Activity

Course Learning Objective:

Solve applications of linear equations.

Weekly Learning Objectives:

Apply the 6-step problem solving strategy to:

- 1) Percent problems.
- 2) Discount and mark-up problems.
- 3) Consecutive integer problems.
- 4) Supplementary and complementary angle problems.
- 5) Mixture problems.
- 6) Distance problems.
- 7) Money problems.
- 8) Interest rate problems.

Directions: Show all work on each problem to justify solutions. Use precise mathematical language and symbolic notation. Provide appropriate mathematical representations (like charts, tables, diagrams) when necessary and include all labels. Each activity is worth 10 points. See the Activity Grading Rubric (in the syllabus or on D2L) for more specific details on grading.

Show all work: Define your variable(s), set up your equation, solve it, write your final answer with a complete sentence including any units that apply. Solve on a separate piece of paper.

1. Raj invested part of his \$20,000 inheritance in a mutual fund that pays 7% simple interest yearly and the rest in a certificate of deposit that pays 9% simple interest yearly. At the end of one year, Raj's investments earned \$1550. Find the amount invested in each account.
2. Marie rode her 21-speed bike at an average speed of 18 miles per hour on level roads and then slowed down to an average of 10 mph on the hilly roads of the trip. If she covered a distance of 98 miles, how long did the entire trip take if traveling the level roads took the same time as traveling the hilly roads?
3. A grocer has 60 pounds of candy worth \$1.50 per pound. He wishes to upgrade this candy to \$3.50 per pound by mixing it with candy worth \$5.50 per pound. How many pounds of \$5.50 candy should be used?
4. Tom made some investments last year and lost 9% of what he invested. He sold the stocks at the end of the year for \$45,500. How much did he originally invest in the stocks?
5. How many liters of a 25% salt solution must be added to a 12% solution to make 52 liters of a 20% salt solution?

6. Find three consecutive odd integers such that the largest number is 5 more than the sum of the first two.
7. Felicia has some money invested at 5%, and \$5000 more than this amount invested at 9%. Her annual interest income is \$1430. Find the amount invested at each rate.
8. Anabelle has \$2.05 in change consisting of three more dimes than quarters. Find the number of dimes and quarters.
9. Two planes leave Denver at the same time. One plane flies northwest toward Seattle at 350 miles per hour. The other plane flies southeast toward Atlanta at 420 miles per hour. In how many hours will they be 1925 miles apart?
10. Two angles are complementary. The complement added to twice the angle equals three times the angle plus 50. Find the angle.
11. A couple wishes to purchase a home for \$105,000. If they need to have a 15% down payment, how much money do they need up front?
12. With a discount of 70%, the price of a bracelet is \$17.99. What is the price without the discount? (Round to the nearest cent)
13. If 6 of the 29 students in a class did not enroll in the school's insurance plan, what percent did enroll? (Round to the nearest tenth of a percent)
14. Mike bought a bicycle and then sold it for 20% more than he paid for it. If he sold the bike for \$144, what did he pay for it?
15. A company bought a used printer for \$350, which was 80% of the original cost. What was the original cost of the printer?
16. Gail made \$24,500 last year and received a 6% raise. How much does she now make?
17. Mark has 84 boxes of candy left to sell for a school fundraiser. He has sold 25% of what he was allocated to sell. How many boxes of candy was he allocated?
18. A plumber's wage this year is \$19.80 an hour. This is a 110% increase over last year's hourly wage. What was his salary last year? (Round to the nearest cent)

19. Jerry made an investment last year in some stocks and lost 12% of what he invested. He sold the stocks at the end of the year for \$48,400. How much did he originally invest in the stocks? (Round to the nearest cent)
20. Sue made an investment in some stocks last year that gained 8%. The stocks were worth \$51,840 at the end of the year. How much did she originally pay for the stocks? (Round to the nearest cent)

Answers: (Remember that your answers should be in complete sentences.)

1. \$12500 at 7%, \$7500 at 9%

2. 7 hours

3. 60 pounds

4. \$50000

5. 32 liters

6. -3, -1, 1

7. \$7000 at 5%, \$12000 at 9%

8. 5 quarters, 8 dimes

9. 2.5 hours

10. 20 degrees

11. \$15,750

12. \$59.97

13. 79.3%

14. \$120

15. \$437.50

16. \$25,970

17. 112 boxes

18. \$9.43

19. \$55,000

20. \$48,000