CENTER FOR TEACHING & LEARNING

College Algebra Practice Word Problems

1. A basketball team played thirty-two games and won three times as many games as it lost. How many games did the team win?

2. The sum of three consecutive integers is forty-two. Find the three numbers.

3. Ninety-six golf balls were picked up at the driving range and placed into two buckets. One bucket has twenty-eight more golf balls than the other bucket. How many golf balls are in each bucket?

4. When the sum of a number and 3 is subtracted from 10 the result is 5. Identify the integer.

5. Find two numbers whose sum is sixty-eight and whose difference is twenty-two.

6. A freight train starts from Los Angeles and heads for Chicago at 40 mph. Two hours later, a passenger train leaves the same station for Chicago traveling 60mph. How long before the passenger train overtakes the freight train?

Further practice:

1. There are three consecutive even numbers such that twice the first is 20 more than the second. Find the numbers.

2. Jay's father is twice as old as Jay. In 20 years, Jay will be two-thirds as old as his father. How old is each now?

3. Chris and Sandra worked as electricians at $14 and $12 per hour, respectively. One month, Sandra worked 10 hours more than Chris. If their total income for the month was $3520, how many hours did each work during the month?

4. Tickets for a baseball game were $2.50 for general admission and $0.50 for kids. If there were six times as many general admission tickets sold as there were kids' tickets sold, and total receipts were $7750, how many of each type of ticket were sold?

5. The Hailu family is on a cross-country trip traveling with the Garcias. One day they get separated and the Garcias are 20 miles ahead of the Hailus on the same road. If the Garcias average 50 mph and the Hailus travel at 60 mph, how long will it be before the Hailus catch up with the Garcias?

CENTER FOR TEACHING & LEARNING

College Algebra Practice Word Problems with Solutions

1. A basketball team played thirty-two games and won three times as many games as it lost. How many games did the team win?

   Solution:
   Let x equal the number of games the team won and let y equal the number of games the team lost. Write an equation for their sum:

   $$x+y=32$$

   From the problem, we can say that $x=3y$

   Substitute this expression into the above equation for x:

   $$(3y)+y=32$$
   $$4y=32$$
   $$y=8$$

   The team lost 8 games.

   Use $y=8$ to find the number of games the team won:

   $$x=3(8)=24$$

   Answer: 24 games won

2. The sum of three consecutive integers is forty-two. Find the three numbers.

   Solution:

   Let x,y and z be the three numbers. Write an equation for their sum:

   $$x+y+z=42$$

   Since the numbers are consecutive,

   x is the smallest number $y=x+1$ $z=x+2$

   Substitute these expressions into the above equation and solve for x:

   $$x+(x+1)+(x+2)=42$$
   $$3x+3=42$$
   $$3x=39$$
   $$x=13$$

   Use $x=13$ to find y and z:

y=13+1=14
z=13+2=15
$x+y+z$=13+14+15=42

Answer: 13, 14, 15

3. Ninety-six golf balls were picked up at the driving range and placed into two buckets. One bucket has twenty-eight more golf balls than the other bucket. How many golf balls are in each bucket?

   Solution:
   Let x equal the number of golf balls in the first bucket and let y equal the number of golf balls in the second bucket.

   Write an equation for their sum:

   $x+y$=96

   From the problem, we can say that $y=x$+28

   Substitute this expression into the equation above for y and solve for x:

   $x+(x+28)$=96
   $2x$+28=96
   $2x$=68
   x=34

   Use x=34 to find y: y=34+28=62

   Answer: 34,62

4. When the sum of a number and 3 is subtracted from 10 the result is 5. Identify the integer.

   Solution:

   The sum of a number and 3 is: x+3

   Write the problem as a mathematical sentence, meaning convert each phrase into the corresponding part of the equation:

   10 - (x+3) = 5

   Now solve with algebra:

10 - x -3 = 5
7 - x = 5
7 - 5 = x
2 = x

x = 2

Answer: 2

5. Find two numbers whose sum is sixty-eight and whose difference is twenty-two.

   Solution:

   Let x equal the first number and let y equal the second number. Write an equation for their sum and for their difference:

   $$x+y=68 \; x-y=22$$

   In the second equation, isolate x by adding y to both sides:

   $$x-y+y=22+y \; x=22+y$$

   Substitute this expression into the first equation for x and solve for y:

   $$(22+y)+y=68$$

   $$22+2y=68$$

   $$2y=46$$

   $$y=23$$

   Use $y=23$ to find x:

   $$x=22+23=45$$

   Answer: 23,45

6. A freight train starts from Los Angeles and heads for Chicago at 40 mph. Two hours later, a passenger train leaves the same station for Chicago traveling 60mph. How long before the passenger train overtakes the freight train?

   Solution:

	Rate	**Time**	**Distance**
Freight	40		

Passenger	60		

Let x = time in hours for the passenger train.

The passenger train started 2 hours after the freight train, so the freight train took 2 hours longer. You can represent the time for the freight by $x + 2$:

	Rate	**Time**	**Distance**
Freight	40	$x + 2$	
Passenger	60	x	

Rate times time equals distance (r × t = d), so multiply what you have in the rate box times what you have in the time box and put the result in the distance box:

	Rate	**Time**	**Distance**
Freight	40	$x + 2$	$40(x + 2)$
Passenger	60	x	$60x$

Set these two distances equal for your equation:

$40(x + 2) = 60x$
$40x + 80 = 60x$
$-20x = -80$

Answer: $x = 4$

Check: $40(4 + 2) = 60(4)$
$240 = 240$

Further practice:

1. There are three consecutive even numbers such that twice the first is 20 more than the second. Find the numbers.

2. Jay's father is twice as old as Jay. In 20 years, Jay will be two-thirds as old as his father. How old is each now?

3. Chris and Sandra worked as electricians at $14 and $12 per hour, respectively. One month, Sandra worked 10 hours more than Chris. If their total income for the month was $3520, how many hours did each work during the month?

4. Tickets for a baseball game were $2.50 for general admission and $0.50 for kids. If there were six times as many general admission tickets sold as there were kids' tickets sold, and total receipts were $7750, how many of each type of ticket were sold?

5. The Hailu family is on a cross-country trip traveling with the Garcias. One day they get separated and the Garcias are 20 miles ahead of the Hailus on the same road. If the Garcias average 50 mph and the Hailus travel at 60 mph, how long will it be before the Hailus catch up with the Garcias?

Answers:

1. 22, 24, 26
2. 20, 40
3. 130, 140
4. 6500, 3000
5. 2 hours