Math 098 Worksheet7.2B_UsingQuadraticFormulaToSolveApplications_v02
NO BOOK/ NO NOTES/YES CALCUATOR
Fall 2017 Dressler

Name_____

Solve the problem.

1) The length of a rectangular storage room is 5 feet longer than its width. If the area of the room is 150 square feet, find its dimensions.

2) The length of a rectangular storage room is 2 feet longer than its width. If the area of the room is 143 square feet, find its dimensions.

3) The length of a rectangular storage room is 7 feet longer than its width. If the area of the room is 120 square feet, find its dimensions.

4) The hypotenuse of an isosceles right triangle is 8 feet longer than either of its legs. Find the exact length of each side.

5) The hypotenuse of an isosceles right triangle is 10 feet longer than either of its legs. Find the exact length of each side.

6) The hypotenuse of an isosceles right triangle is 6 feet longer than either of its legs. Find the exact length of each side.

7) The hypotenuse of a right triangle is 11 feet long. One leg of the triangle is 5 feet longer then the other leg. Find the perimeter of the triangle.

8) The hypotenuse of a right triangle is 11 feet long. One leg of the triangle is 3 feet longer then the other leg. Find the perimeter of the triangle.

9) The hypotenuse of a right triangle is 9 feet long. One leg of the triangle is 5 feet longer then the other leg. Find the perimeter of the triangle.

10) The area of a rectangular wall in a classroom is 348 square feet. Its length is 7 feet shorter than three times its width. Find the length and width of the wall of the classroom.

11) The area of a rectangular wall in a classroom is 270 square feet. Its length is 3 feet shorter than three times its width. Find the length and width of the wall of the classroom.

12) The area of a rectangular wall in a classroom is 308 square feet. Its length is 5 feet shorter than three times its width. Find the length and width of the wall of the classroom.

13) The function $P(x) = 0.65x^2 - 0.046x + 2$ models the approximate population P, in thousands, for a species of fish in a local pond, x years after 1997. During what year will the population reach 43,232 fish?

14) The function $P(x) = 0.65x^2 - 0.044x + 1$ models the approximate population P, in thousands, for a species of fish in a local pond, x years after 1997. During what year will the population reach 65,560 fish?

15) The function $P(x) = 0.67x^2 - 0.041x + 1$ models the approximate population P, in thousands, for a species of fish in a local pond, x years after 1997. During what year will the population reach 54,901 fish?

16) Shelly can cut a lawn with a riding mower in 3 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 8 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone.

17) Shelly can cut a lawn with a riding mower in 3 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 4 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone.

18) Shelly can cut a lawn with a riding mower in 2 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 8 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone.

19) Shelly can cut a lawn with a riding mower in 5 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 4 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone.

20) Two pipes can be used to fill a pool. Working together, the two pipes can fill the pool in 6 hours. The larger pipe can fill the pool in 3 hours less time than the smaller pipe can alone. Find the time to the nearest tenth of an hour it takes for the smaller pipe working alone to fill the pool.

21) Two pipes can be used to fill a pool. Working together, the two pipes can fill the pool in 2 hours. The larger pipe can fill the pool in 4 hours less time than the smaller pipe can alone. Find the time to the nearest tenth of an hour it takes for the smaller pipe working alone to fill the pool.

22) Two pipes can be used to fill a pool. Working together, the two pipes can fill the pool in 5 hours. The larger pipe can fill the pool in 2 hours less time than the smaller pipe can alone. Find the time to the nearest tenth of an hour it takes for the smaller pipe working alone to fill the pool.

23) Two pipes can be used to fill a pool. Working together, the two pipes can fill the pool in 7 hours. The larger pipe can fill the pool in 4 hours less time than the smaller pipe can alone. Find the time to the nearest tenth of an hour it takes for the smaller pipe working alone to fill the pool.

24) The revenue for a small company is given by the quadratic function $r(t) = 9t^2 + 6t + 690$ where t is the number of years since 1998 and r(t) is in thousands of dollars. If this trend continues, find the year after 1998 in which the company's revenue will be $858 thousand. Round to the nearest whole year.

25) The revenue for a small company is given by the quadratic function $r(t) = 8t^2 + 4t + 710$ where t is the number of years since 1998 and r(t) is in thousands of dollars. If this trend continues, find the year after 1998 in which the company's revenue will be $794 thousand. Round to the nearest whole year.

26) An express train travels 515 miles between two cities. During the first 88 miles of a trip, the train traveled through mountainous terrain. The train traveled 17 miles per hour slower through mountainous terrain than through level terrain. If the total time to travel between the cities was 9 hours, find the speed of the train on level terrain.

27) The length of a rectangular storage room is 9 feet longer than its width. If the area of the room is 70 square feet, find its dimensions.

28) The hypotenuse of an isosceles right triangle is 7 feet longer than either of its legs. Find the exact length of each side.

29) The hypotenuse of a right triangle is 13 feet long. One leg of the triangle is 5 feet longer then the other leg. Find the perimeter of the triangle.

30) Shelly can cut a lawn with a riding mower in 4 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 5 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone.

1) 10 feet by 15 feet
2) 11 feet by 13 feet
3) 8 feet by 15 feet
4) $8 + 8\sqrt{2}$ feet
   $8 + 8\sqrt{2}$ feet
   $16 + 8\sqrt{2}$ feet
5) $10 + 10\sqrt{2}$ feet
   $10 + 10\sqrt{2}$ feet
   $20 + 10\sqrt{2}$ feet
6) $6 + 6\sqrt{2}$ feet
   $6 + 6\sqrt{2}$ feet
   $12 + 6\sqrt{2}$ feet
7) $\sqrt{217} + 11$ feet
8) $\sqrt{233} + 11$ feet
9) $\sqrt{137} + 9$ feet
10) width = 12 ft; length = 29 ft
11) width = 10 ft; length = 27 ft
12) width = 11 ft; length = 28 ft
13) 2005
14) 2007
15) 2006
16) 17.6 hours
17) 9.8 hours
18) 17.1 hours
19) 11.2 hours
20) 13.7 hours
21) 6.8 hours
22) 11.1 hours
23) 16.3 hours
24) 2002
25) 2001
26) 61 mph
27) 5 feet by 14 feet
28) $7 + 7\sqrt{2}$ feet
   $7 + 7\sqrt{2}$ feet
   $14 + 7\sqrt{2}$ feet
29) $\sqrt{313} + 13$ feet
30) 12.4 hours