Math 098 Worksheet7.2B_UsingQuadraticFormulaToSolveApplications_v01
NO BOOK/ NO NOTES/YES CALCUATOR
Fall 2017 Dressler

Name_____

Solve the problem.

1) The length of a rectangular storage room is 9 feet longer than its width. If the area of the room is 90 square feet, find its dimensions.

2) The length of a rectangular storage room is 5 feet longer than its width. If the area of the room is 126 square feet, find its dimensions.

3) The length of a rectangular storage room is 6 feet longer than its width. If the area of the room is 72 square feet, find its dimensions.

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

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

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

7) 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.

8) 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.

9) The hypotenuse of a right triangle is 15 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 319 square feet. Its length is 4 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 171 square feet. Its length is 8 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 119 square feet. Its length is 4 feet shorter than three times its width. Find the length and width of the wall of the classroom.

13) The function $P(x) = 0.65x^2 - 0.045x + 3$ 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 67,550 fish?

14) The function $P(x) = 0.63x^2 - 0.041x + 2$ 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 24,434 fish?

15) The function $P(x) = 0.62x^2 - 0.047x + 1$ 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 23,038 fish?

16) 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 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 5 hours less time than it takes William to cut the lawn with a push mower. If they can cut the lawn in 7 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 6 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 6 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 4 hours. The larger pipe can fill the pool in 5 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 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.

22) 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 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 3 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.

24) The revenue for a small company is given by the quadratic function $r(t) = 12t^2 + 7t + 970$ 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 $2499 thousand. Round to the nearest whole year.

25) The revenue for a small company is given by the quadratic function $r(t) = 11t^2 + 8t + 590$ 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 $2009 thousand. Round to the nearest whole year.

26) An express train travels 200 miles between two cities. During the first 108 miles of a trip, the train traveled through mountainous terrain. The train traveled 10 miles per hour slower through mountainous terrain than through level terrain. If the total time to travel between the cities was 5 hours, find the speed of the train on level terrain.

27) The length of a rectangular storage room is 2 feet longer than its width. If the area of the room is 35 square feet, find its dimensions.

28) The hypotenuse of an isosceles right triangle is 2 feet longer than either of its legs. Find the exact length of each side.

29) The hypotenuse of a right triangle is 5 feet long. One leg of the triangle is 3 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 2 hours working together find how long to the nearest tenth of an hour it takes for William to cut the lawn alone.

1) 6 feet by 15 feet
2) 9 feet by 14 feet
3) 6 feet by 12 feet
4) $10 + 10\sqrt{2}$ feet
   $10 + 10\sqrt{2}$ feet
   $20 + 10\sqrt{2}$ feet
5) $5 + 5\sqrt{2}$ feet
   $5 + 5\sqrt{2}$ feet
   $10 + 5\sqrt{2}$ feet
6) $4 + 4\sqrt{2}$ feet
   $4 + 4\sqrt{2}$ feet
   $8 + 4\sqrt{2}$ feet
7) $\sqrt{137} + 9$ feet
8) $\sqrt{313} + 13$ feet
9) $5\sqrt{17} + 15$ feet
10) width = 11 ft; length = 29 ft
11) width = 9 ft; length = 19 ft
12) width = 7 ft; length = 17 ft
13) 2007
14) 2003
15) 2003
16) 18.9 hours
17) 16.9 hours
18) 13.1 hours
19) 15.0 hours
20) 11.2 hours
21) 11.1 hours
22) 13.1 hours
23) 7.9 hours
24) 2009
25) 2009
26) 46 mph
27) 5 feet by 7 feet
28) $2 + 2\sqrt{2}$ feet
    $2 + 2\sqrt{2}$ feet
    $4 + 2\sqrt{2}$ feet
29) $\sqrt{41} + 5$ feet
30) 6.8 hours