Math 098 Worksheet7.4B_SolvingAppllicationsInQuadraticForm_v01 NO BOOK/ NO NOTES/YES CALCUATOR Fall 2017 Dressler

Name_

Solve the problem.

- 1) An object is thrown upward from the top of a 160-foot building with an initial velocity of 48 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 48t + 160$. When will the object hit the ground?
- 2) A window washer accidentally drops a bucket from the top of a 144-foot building. The height h of the bucket after t seconds is given by $h = -16t^2 + 144$. When will the bucket hit the ground?
- 3) A window washer accidentally drops a bucket from the top of a 64–foot building. The height h of the bucket after t seconds is given by $h = -16t^2 + 64$. When will the bucket hit the ground?
- 4) A window washer accidentally drops a bucket from the top of a 400-foot building. The height h of the bucket after t seconds is given by $h = -16t^2 + 400$. When will the bucket hit the ground?

- 5) A window washer accidentally drops a bucket from the top of a 256-foot building. The height h of the bucket after t seconds is given by $h = -16t^2 + 256$. When will the bucket hit the ground?
- 6) If the cost, C(x), for manufacturing x units of a certain product is given by
 C(x) = x² 40x + 2100, find the number of units manufactured at a cost of \$8100.
- 7) If the cost, C(x), for manufacturing x units of a certain product is given by
 C(x) = x² 30x + 1000, find the number of units manufactured at a cost of \$3800.
- 8) A manufacturer determines that the profit in dollars for manufacturing n units is $P = 2n^2 - 60n - 400$. (Assume that n is a positive integer) How many units are produced when the profit is \$400?
- 9) A manufacturer determines that the profit in dollars for manufacturing n units is $P = 2n^2 - 70n + 20$. (Assume that n is a positive integer) How many units are produced when the profit is \$420?

- 10) A certain rectangle's length is 7 feet longer than its width. If the area of the rectangle is 78 square feet, find its dimensions.
- 11) A certain rectangle's length is 2 feet longer than its width. If the area of the rectangle is 80 square feet, find its dimensions.
- 12) A certain rectangle's length is 2 feet longer than its width. If the area of the rectangle is 195 square feet, find its dimensions.
- 13) The width of a rectangle is 6 kilometers less than twice its length. If its area is 216 square kilometers, find the dimensions of the rectangle.
- 14) The width of a rectangle is 6 kilometers less than twice its length. If its area is 140 square kilometers, find the dimensions of the rectangle.
- 15) The width of a rectangle is 6 kilometers less than twice its length. If its area is 108 square kilometers, find the dimensions of the rectangle.
- 16) Each side of a square is lengthened by 2 inches. The area of this new, larger square is 25 square inches. Find the length of a side of the original square.

- 17) Each side of a square is lengthened by 2 inches. The area of this new, larger square is 36 square inches. Find the length of a side of the original square.
- 18) Each side of a square is lengthened by 2 inches. The area of this new, larger square is 49 square inches. Find the length of a side of the original square.
- 19) The side of a square equals the length of a rectangle. The width of the rectangle is 4 centimeters longer than its length. The sum of the areas of the square and the rectangle is 160 square centimeters. Find the side of the square.
- 20) The side of a square equals the length of a rectangle. The width of the rectangle is 4 centimeters longer than its length. The sum of the areas of the square and the rectangle is 198 square centimeters. Find the side of the square.
- 21) The side of a square equals the length of a rectangle. The width of the rectangle is 4 centimeters longer than its length. The sum of the areas of the square and the rectangle is 48 square centimeters. Find the side of the square.

- 22) Kara is making a box by cutting out 3-in.-by-3-in. squares from a square piece of cardboard and folding the edges to make a 3-inch-high box. What size of cardboard does Kara need to make a 3-inch-high box with a volume of 48 cubic inches?
- 23) Kara is making a box by cutting out 5-in.-by-5-in. squares from a square piece of cardboard and folding the edges to make a 5-inch-high box. What size of cardboard does Kara need to make a 5-inch-high box with a volume of 80 cubic inches?
- 24) Kara is making a box by cutting out 3-in.-by-3-in. squares from a square piece of cardboard and folding the edges to make a 3-inch-high box. What size of cardboard does Kara need to make a 3-inch-high box with a volume of 75 cubic inches?
- 25) The public swimming pool, which is a rectangle measuring 33 meters by 30 meters, needs a new deck. The deck of uniform width that will surround the pool will be made of concrete. There is only enough money in the budget to cover 1264 square meters with concrete. How wide should the deck be?
- 26) The public swimming pool, which is a rectangle measuring 21 meters by 27 meters, needs a new deck. The deck of uniform width that will surround the pool will be made of concrete. There is only enough money in the budget to cover 580 square meters with concrete. How wide should the deck be?

- 27) The public swimming pool, which is a rectangle measuring 32 meters by 33 meters, needs a new deck. The deck of uniform width that will surround the pool will be made of concrete. There is only enough money in the budget to cover 750 square meters with concrete. How wide should the deck be?
- 28) The outside dimensions of a picture frame are 28 cm and 39 cm. The area of the picture inside the frame is 672 square centimeters. Find the width of the frame.



29) The outside dimensions of a picture frame are 27 cm and 30 cm. The area of the picture inside the frame is 550 square centimeters. Find the width of the frame.



- 30) An object is thrown upward from the top of a 160-foot building with an initial velocity of 48 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 48t + 160$. When will the object hit the ground?
- 31) The public swimming pool, which is a rectangle measuring 33 meters by 27 meters, needs a new deck. The deck of uniform width that will surround the pool will be made of concrete. There is only enough money in the budget to cover 864 square meters with concrete. How wide should the deck be?
- 32) A window washer accidentally drops a bucket from the top of a 64–foot building. The height h of the bucket after t seconds is given by $h = -16t^2 + 64$. When will the bucket hit the ground?
- 33) Kara is making a box by cutting out 2-in.-by-2-in. squares from a square piece of cardboard and folding the edges to make a 2-inch-high box. What size of cardboard does Kara need to make a 2-inch-high box with a volume of 98 cubic inches?
- 34) A manufacturer determines that the profit in dollars for manufacturing n units is $P = 2n^2 - 40n - 180$. (Assume that n is a positive integer) How many units are produced when the profit is \$420?

- 35) A certain rectangle's length is 4 feet longer than its width. If the area of the rectangle is 45 square feet, find its dimensions.
- 36) The width of a rectangle is 6 kilometers less than twice its length. If its area is 176 square kilometers, find the dimensions of the rectangle.
- 37) The side of a square equals the length of a rectangle. The width of the rectangle is 4 centimeters longer than its length. The sum of the areas of the square and the rectangle is 126 square centimeters. Find the side of the square.
- 38) Kara is making a box by cutting out 2-in.-by-2-in. squares from a square piece of cardboard and folding the edges to make a 2-inch-high box. What size of cardboard does Kara need to make a 2-inch-high box with a volume of 128 cubic inches?
- 39) The outside dimensions of a picture frame are 29 cm and 36 cm. The area of the picture inside the frame is 744 square centimeters. Find the width of the frame.



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Answer Key
Testname: WORKSHEET7.4B_SOLVINGAPPLLICATIONSINQUADRATICFORM_V01
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1) 5 sec 2) 3 sec 3) 2 sec 4) 5 sec 5) 4 sec 6) 100 units 7) 70 units 8) 40 units 9) 40 units 10) 6 ft by 13 ft 11) 8 ft by 10 ft 12) 13 ft by 15 ft 13) length = 12 km, width = 18 km14) length = 10 km, width = 14 km15) length = 9 km, width = 12 km16) 3 in. 17) 4 in. 18) 5 in. 19) 8 cm 20) 9 cm 21) 4 cm 22) 10 in. by 10 in. 23) 14 in. by 14 in. 24) 11 in. by 11 in. 25) 8 m 26) 5 m 27) 5 m 28) 3.5 cm 29) 2.5 cm 30) 5 sec 31) 6 m 32) 2 sec 33) 11 in. by 11 in. 34) 30 units 35) 5 ft by 9 ft 36) length = 11 km, width = 16 km37) 7 cm 38) 12 in. by 12 in. 39) 2.5 cm