Math 098 Worksheet7.6C_PolynomialInequallityApplications_v01
NO BOOK/ NO NOTES/YES CALCUATOR
Fall 2017 Dressler

Name_____

Use an inequality and the five–step process to solve the problem.

1) One side of a rectangle is 9 inches and the other side is x inches. What values of x will make the perimeter at least 50?

2) One side of a rectangle is 14 inches and the other side is x inches. What values of x will make the perimeter at least 58?

3) One side of a rectangle is 8 inches and the other side is x inches. What values of x will make the perimeter at most 42?

4) One side of a rectangle is 13 inches and the other side is x inches. What values of x will make the perimeter at most 54?

5) One side of a rectangle is 4 times the other, and the perimeter is not to exceed 140. Find the possible values for x, the length of the shorter side.

6) One side of a rectangle is 4 times the other, and the perimeter is not to exceed 90. Find the possible values for x, the length of the shorter side.

7) One side of a triangle is 2 cm shorter than the base, x. The other side is 4 cm longer than the base. What lengths of the base will allow the perimeter of the triangle to be at least 50 cm?

8) One side of a rectangle is 8 inches and the other side is x inches. Find the value of x if the area must be at least 48 square inches.

9) One side of a rectangle is 11 inches and the other side is x inches. Find the value of x if the area must be at least 99 square inches.

10) The area of a triangle must be at most 12 square inches, the base is 4 inches, and the height is x inches. Find the possible values for x.

11) The area of a triangle must be at most 25 square inches, the base is 5 inches, and the height is x inches. Find the possible values for x.

12) One side of a rectangle is 3 times the other, and the perimeter is not to exceed 56. Find the possible values for x, the length of the shorter side.

Solve.

13) An arrow is fired straight up from the ground with an initial velocity of 224 feet per second. Its height, s(t), in feet at any time t is given by the function $s(t) = -16t^2 + 224t$. Find the interval of time for which the height of the arrow is greater than 460 feet.

14) An arrow is fired straight up from the ground with an initial velocity of 208 feet per second. Its height, s(t), in feet at any time t is given by the function $s(t) = -16t^2 + 208t$. Find the interval of time for which the height of the arrow is greater than 100 feet.

15) The total profit function P(x) for a company producing x thousand units is given by $P(x) = -2x^2 + 32x - 120$. Find the values of x for which the company makes a profit. [Hint: The company makes a profit when $P(x) > 0$.]

16) The total profit function P(x) for a company producing x thousand units is given by $P(x) = -3x^2 + 54x - 216$. Find the values of x for which the company makes a profit. [Hint: The company makes a profit when $P(x) > 0$.]

Use an inequality and the five–step process to solve the problem.

17) In order for a chemical reaction to take place, the Fahrenheit temperature of the reagents must be at least 125.8°F. Find the Celsius temperatures at which the reaction may occur. $(F = \frac{9}{5}C + 32)$

18) In order for a chemical reaction to remain stable, its Celsius temperature must be no more than 75.84°C. Find the Farenheit temperatures at which the reaction will remain stable. $(F = \frac{9}{5}C + 32)$

19) In order for a chemical reaction to remain stable, its Celsius temperature must be no more than 78.95°C. Find the Farenheit temperatures at which the reaction will remain stable. $(F = \frac{9}{5}C + 32)$

20) The equation $y = 0.002x + 0.20$ can be used to determine the approximate profit, y in dollars, of producing x items. How many items must be produced so the profit will be at least $ 4108?

21) If the formula $R = -0.037t + 50.1$ can be used to predict the world record in the 400–meter dash t years after 1925, for what years will the world records be 47.3 seconds or less?

22) If the formula $P = 0.5643Y - 1092.57$ can be used to predict the average price of a theater ticket after 1945, for what years will the average theater ticket price be at least 49 dollars? (Y is the actual year.)

1) $x \geq 16$
2) $x \geq 15$
3) $0 < x \leq 13$
4) $0 < x \leq 14$
5) $0 < x \leq 14$
6) $0 < x \leq 9$
7) $x \geq 16$
8) $x \geq 6$
9) $x \geq 9$
10) $0 < x \leq 6$
11) $0 < x \leq 10$
12) $0 < x \leq 7$
13) between $\frac{5}{2}$ and $\frac{23}{2}$ sec
14) between $\frac{1}{2}$ and $\frac{25}{2}$ sec
15) x is between 6 thousand units and 10 thousand units
16) x is between 6 thousand units and 12 thousand units
17) $C \geq 52.11°$
18) $F \leq 168.51°$
19) $F \leq 174.11°$
20) $x \geq 2{,}053{,}900$
21) 2001 or after
22) 2023 or after