Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Core \_\_\_\_\_

**Writing Inequalities**

For each situation, define a variable for the unknown quantity and then write an inequality that models the situation. Use a guess and check or other strategy to find a solution if one is asked for.

Examples:

1. Four times a number is no more than three times that number plus eight. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

Let n = a number; 4n ≤ 3n + 8; n ≤ 8

1. Seven times a number is greater than six times that number minus two. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

Let n = a number; 7n > 6n -2; n > -2

1. Yulia Raskina scored a total of 39.548 points in the four events of rhythmic gymnastics. Yulia Barsukova scored 9.883 in the rope competition, 9.900 in the hoop competition, and 9.916 in the ball competition. How many points did Barsukova need to score in the ribbon competition to surpass Raskina and win the gold medal?

Let r = Barsukova’s score in the ribbon competition.

39.548 < 9.883 + 9.900 + 9.916 + r; r > 9.849

1. Alicia wants to buy season passes to two theme parks. If one season pass costs $54.99, and Alicia has $100 dollars to spend on passes, the second season pass must cost no more than what amount?

Let x = the cost of the second pass

54.99 + x ≤ 100; x ≤ 45.01 dollars

Practice:

1. The sum of a number and 13 is at least 27. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

Let a = a number; a + 13 ≥ 27; a ≥ 14

1. A number decreased by 5 is less than 33. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

Let n = a number; n – 5 < 33; n < 38

1. Thirty is no greater than the sum of a number and -8. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? Let n = a number; 30 ≤ n + (-8); n ≥ 38
2. Twice a number is more than the sum of that number and 14. The number is \_\_\_\_\_\_\_\_\_\_\_\_?

Let n = a number; 2n > n + 14; n > 14

1. The sum of two numbers is at most 18, and one of the numbers is -7. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_?

Let n = the unknown number; n + (-7) ≤ 18; n ≤ 25

1. Four times a number is less than or equal to the sum of three times the number and -2. The number is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

Let n = a number; 4n ≤ 3n + (-2); n ≤ -2

1. Adult Nile crocodiles weigh up to 2200 pounds. If a young Nile crocodile weighs 157 pounds, how many pounds might it be expected to gain in its lifetime?

Let p = the number of pounds gained; 157 + p ≤ 2200; p ≤ 2043

1. There are 3500 species of bees and more than 600,000 species of insects. How many species of insects are not bees?

Let x = the number of species of insects that are not bees; 3500 + x > 600,000; x > 596,500 species

1. City Bank requires a minimum balance of $1500 to maintain free checking services. If Mr. Hayashi knows he must write checks for $1300 and $947, how much money should he have in his account before writing the checks if he does not want to go below the minimum balance?

Let x = the beginning balance; x – 1300 – 947 ≥ 1500; x ≥ 3747 dollars

1. Terrell has $65 to spend at the mall. He bought a T-shirt for $18 and a belt for $14. If Terrell still wants to buy a pair of jeans, how much can he spend on the jeans?

Let x = the price of jeans; x + 18 + 14 ≤ 65; x ≤ 33 dollars

Challenge problems:

1. The Centerville High School soccer team plays 18 games in the season. The team has a goal of winning at least 60% of its games. After the first three weeks of the season, the team has won 4 games. How many more games must the team win to meet their goal?
2. Critical thinking: Determine whether each statement is *always, sometimes or never* true.
   1. If a < b and c < d, then a + c < b + d
   2. If a < b and c < d, then a + c ≥ b + d
   3. If a < b and c < d, then a - c = b - d