1. **D.** 20 black rats, 55 brown rats, 10 white rats, and 35 gray rats equals 120 total rats. The fraction of brown rats would therefore be 55/120, which simplifies to 11/24.
2. **C.** Arrange the given values in order from least to greatest: 2, 3, 4, 5, 5, 6, 7, 9, 12. The median is the middle number; in this case, 5. The range is the difference between the greatest number and the smallest number; in this case, 10. The sum of the median and range would be 5+10 = 15.
3. **D.** Using order of operations, === 10.
4. **C.** The numerator can be factored into. The denominator can be factored into . As both the numerator and the denominator include a , you can cross both of those out, resulting in the expression .
5. **B.** Let one block of cheese equal B, one carrot equal C, and one apple equal A. So, with the given information: and . Multiply the second equation by 2 to get that . Now, as 20*C* is equal to *B*, by transitive property we can say that one block of cheese is equal to 8 apples.
6. **A.** By definition, the slope of a line equals . Plugging in (3 , 7) and (-13 , 25) into the formula, we get a result of:.
7. **B.** The pattern here is that you take the given number, multiply it by 2, then add 1. You repeat this until you get the answer: .
8. **B.** The old lady uses up a constant 3 bullets every second, and won’t stop shooting until she’s out of bullets. To find the number of seconds she has before she runs out of bullets, take the number of available bullets and divide that number by the rate – in this case, 3 bullets/sec. So, 45/3 = 15 seconds.
9. **B.** can be rewritten as: , which can then be written as , so *x* = 8 or -4. As you can’t have a negative number of rats, *x* must be 8, and so

8\*3 = 24.

1. **B.** By order of operations, we must address the 2☺3 first. Plugging in 2 and 3 for *a* and *b* respectively, we get a result of 13. Now we need to find 13☺1. Plugging in 13 and 1 for *a* and *b* respectively, we get a result of 14.

1. **D.** Substitute 4 in for *x* in the given equation: . So, .
2. **D.** The volume of a rectangular prism is length times width times height. So, the volume of the book is inches cubed.
3. **C.** Remy starts at (2 , 5) and ends up at (-2 , -2). Using the midpoint formula, we find the midpoint to be (0 , 1.5).
4. **A.** The square root of 528 is 23. By definition, when you square root an exponent, you divide said exponent by 2. Therefore, the square root of is . So, the answer is: .
5. **A.** The GCF of 16 and 4 is 4. The GCF of and is. So, the answer is: .
6. **B.** You can just plug in the given coordinates into the answer choice for this one. Do so, and you’ll see that only answer choice B works for the given starting and ending points.
7. **D.** He has 4 choices for an entrée, 12 choices for a main course, and 3 choices for a drink. To get the total number of possible combinations of an entrée, main course, and drink, multiply 4, 12, and 3 to get 144.

1. **A.** If *y* = 16, then *z* = 20 and *x* = 32. .
2. **D.** They now have 73 onions left, while they started with 100. 73/100 = 73% of their original amount of onions were used.
3. **C.** The square of 4 is 16. By definition, when you square an exponent, you multiply said exponent by 2. Therefore, after squaring the given expression, you obtain the expression. As the questions calls for only positive exponents, the *b* and *c* variables are moved down to the denominator, obtaining the final answer of .
4. **C.** They work 15 hours Monday thru Friday, 16 hours on Saturday, and 12 hours on Sunday. 
5. **E.** First, add *bx* to both sides, resulting in the equation. You can take out a *x* on the left side of the equation, resulting in the equation . Divide both sides by  and simplify, resulting in a final answer of .
6. **A**. Remy’s family has 15 minutes to save him. They spend of their total time of 15 minutes to get there (9 minutes) and  of the remaining 6 minutes to open the cage (2 minutes), they have 4 minutes left.
7. **D.** By definition, OR . Solving both equations, we get that  OR .
8. **D.** Parallel lines have the same slope. As Collete is moving along the line, the slope of her line is 3. For the two lines to be parallel, the slope of the line the taxi is traveling along must have the same slope as Collete’s line. As such, the slope of the taxi’s line must also be 3.
9. **B.** Set up similar right triangles. With the given information, we can set up the following proportions:  . Cross multiply to get: , so *x* = 12. Thus, Ego is 20-12 = 8 feet away from the sign.

1. **D.** By definition, perpendicular lines have opposite reciprocal slopes. So, the answer is .
2. **A. ** is approximately 4.583. So, for , *x* must be smaller than 4.583. The only answer choice that fits this condition is A.
3. **A.** Substitute the given values for happiness level and number of bites into the given function: . So,  and *y* must equal 6 to fit with the given domain for *y* (positive numbers).
4. **B.** Follow order of operations.  can be written as , which simplifies to . Adding 2*x* to both sides and subtracting 26 from both sides nets. So, .