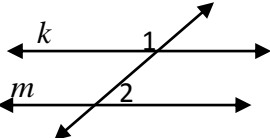

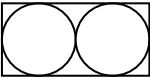





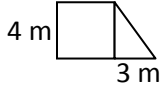
Directions: Write the answer to each question in the box to the right of the question. Units are given in plural form even if the singular form is correct. Use scratch paper to do your work. Calculators are allowed, but not necessary.

Common fractions should be in simplest form ($\frac{a}{b}$, not mixed numbers).

<p>1. What is the next number in the sequence?</p> $\frac{81}{64}, \frac{27}{32}, \frac{9}{16}, \text{---}$	<p>1. $\frac{3}{8}$</p>										
<p>2. If k is parallel to m, $\angle 2 = 36^\circ$ what is the measure of $\angle 1$?</p> 	<p>2. 144°</p>										
<p>3. Solve the linear inequality for x. $-2(x+1) < x+2$</p>	<p>3. $x > \frac{-4}{3}$</p>										
<p>4. If the given table of values represents points on a straight line, what would the y value be when $x = 22$?</p> <table border="1" data-bbox="365 955 841 1066"> <tbody> <tr> <td>x</td> <td>10</td> <td>20</td> <td>30</td> <td>40</td> </tr> <tr> <td>y</td> <td>15</td> <td>30</td> <td>45</td> <td>60</td> </tr> </tbody> </table>	x	10	20	30	40	y	15	30	45	60	<p>4. 33</p>
x	10	20	30	40							
y	15	30	45	60							
<p>5. In the English alphabet, for what letter is the ratio of the letters before it to the letters after it 2:3?</p> <p>a.) J b.) K c.) O d.) P</p>	<p>5. a. <input checked="" type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d. <input type="radio"/></p>										
<p>6. A particular plant doubles its size every day. On Saturday it is <u>?</u> times as big as it was on the preceding Sunday.</p> <p>a.) 2 b.) 6 c.) 49 d.) 64 e.) 128</p>	<p>6. a. <input type="radio"/> b. <input type="radio"/> c. <input checked="" type="radio"/> d. <input type="radio"/> e. <input type="radio"/></p>										
<p>7. Which of the following is both the sum of two prime numbers and the product of two other prime numbers?</p> <p>a.) 19 b.) 21 c.) 31 d.) 51</p>	<p>7. a. <input checked="" type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d. <input type="radio"/></p>										
<p>8. A particular basketball team scores an average of 67 points per game for the first four games, and an average of 64 points per game for the first five games. How many points did the team score in its fifth game?</p> <p>a.) 51 b.) 52 c.) 53 d.) 54 e.) 55</p>	<p>8. a. <input checked="" type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d. <input type="radio"/> e. <input type="radio"/></p>										
<p>9. A large equilateral triangle is made of tessellated smaller equilateral triangles that are 3 inches on each side (see figure of a triangle made of 4 smaller triangles). How many of the smaller triangles are necessary to build a triangle that is 12 inches on each side?</p> <p>a.) 10 b.) 12 c.) 16 d.) 20</p> 	<p>9. a. <input type="radio"/> b. <input type="radio"/> c. <input checked="" type="radio"/> d. <input type="radio"/></p>										

<p>10. What is the value of the given product? $\frac{2}{3} \times 15 \times \frac{3}{5} \times 40 \times \frac{5}{8}$</p> <p>a.) 2 b.) 30 c.) 60 d.) 150</p>	<p>10.</p> <p>a. b. c. Ⓓ</p>
<p>11. $2^2 \times 3^3 \times 4^4 \times 6^6 \times 9^9 =$</p> <p>a.) $2^{14} \times 3^{19}$ b.) $2^{16} \times 3^{27}$ c.) $2^{96} \times 3^{324}$ d.) $2^{12} \times 3^{24}$</p>	<p>11.</p> <p>a. Ⓐ. c. d.</p>
<p>12. Which of the following shapes could have three consecutive sides of length 4, 4, and 10?</p> <p>a.) triangle b.) rectangle c.) trapezoid d.) parallelogram e.) All of these</p>	<p>12.</p> <p>a. b. Ⓒ. d. e.</p>
<p>13. Two circles of area $16\pi \text{ cm}^2$ each fit side by side so that they touch all four sides of a rectangle (see figure). What is the area of the rectangle?</p> <p>a.) 48 cm^2 b.) 96 cm^2 c.) 128 cm^2 d.) 512 cm^2</p> 	<p>13.</p> <p>a. b. Ⓒ. d.</p>
<p>14. An OSSM Calculus class increased in size by $33.\bar{3}\%$ from last semester to this semester. If the average number of students in the Calculus class is 21, how many students were in the class last semester?</p> <p>a.) 15 b.) 18 c.) 21 d.) 24 e.) 28</p>	<p>14.</p> <p>a. Ⓐ. c. d. e.</p>
<p>15. I'm thinking of a natural number. If I square my number and divide by four, the quotient is 16. What is my number?</p> <p>a.) 1 b.) 2 c.) 8 d.) 16</p>	<p>15.</p> <p>a. b. Ⓒ. d.</p>
<p>16. For the given group of numbers, put the mean, median, and mode in order from least to greatest. {1, 2, 2, 4, 5, 6, 9, 10}</p> <p>a.) median<mean<mode b.) mode<mean<median</p> <p>c.) median<mode<mean d.) mode<median<mean</p>	<p>16.</p> <p>a. b. c. Ⓓ</p>
<p>17. What is the value of the given quotient? $\frac{4 - 2 \times 6 \div 3 + 1}{2(3^2 - 2) + 1}$</p> <p>a.) 0 b.) 1/15 c.) 1/3 d.) 9/2</p>	<p>17.</p> <p>a. Ⓐ. c. d.</p>
<p>18. The sum of four numbers is one-fourth. What is the average?</p> <p>a.) one-sixteenth b.) one-fourth c.) one-half d.) 1</p>	<p>18.</p> <p>Ⓐ. b. c. d.</p>
<p>19. I have quarters and dimes that value a total of \$2.75. I have 20 coins total. How many quarters do I have?</p> <p>a.) 1 quarters b.) 5 quarters c.) 7 quarters d.) 13 quarter</p>	<p>19.</p> <p>a. Ⓐ. c. d.</p>
<p>20. The roof of my house makes an isosceles triangle with the ground. If two of the sides are 16 and 32, then what is the perimeter of the triangle?</p> <p>a.) 64 b.) 75.71 c.) 80 d.) 83.77</p> 	<p>20.</p> <p>a. b. Ⓒ. d.</p>
<p>21. If I add the digits of my school ID and get 37, then my school ID cannot have <u>?</u> numbers.</p> <p>a.) 4 b.) 5 c.) 6 d.) 38</p>	<p>21.</p> <p>Ⓐ. b. c. d.</p>

<p>22. x is a number between -4 and -3. Which is the smallest?</p> <p>a.) x b.) $x-2$ c.) $x+2$ d.) $\frac{x}{2}$ e.) $3x$</p>	<p>22.</p> <p>a. b. c. d. e</p>
<p>23. Multiplying 5 by 20% gets the same results as dividing 5 by</p> <p>a.) 0.2 b.) 5 c.) 30 d.) 100</p>	<p>23.</p> <p>a. b. c. d.</p>
<p>24. The number $(0.01)^{20}$ is equal to</p> <p>a.) $\frac{1}{10^{20}}$ b.) $\frac{1}{100^{40}}$ c.) 1×10^{-20} d.) 100^{-20} e.) All of these</p>	<p>24.</p> <p>a. b. c. d. e.</p>
<p>25. A perimeter of a rectangle is 38 inches, and the area of the rectangle is 54.25 square inches. What are the dimensions of the rectangle?</p> <p>a.) 5x14 inches b.) 4.5 x 14.5 inches c.) 4 x 15 inches d.) 3.5 x 15.5 inches e.) 7x7.75 inches</p>	<p>25.</p> <p>a. b. c. d. e.</p>
<p>26. A magazine price was reduced from 2014 price by 20% for 2015, but increased from the 2015 price by 10% for 2016. If the price of the magazine is \$22/year for 2016, what was it for 2014?</p> <p>a.) \$23.76 b.) \$24 c.) \$24.20 d.) \$25</p>	<p>26.</p> <p>a. b. c. d</p>
<p>27. 20 math books weigh the same as 16 science books, then how many math books weigh the same as 20 science books?</p> <p>a.) 16 b.) 18 c.) 24 d.) 25</p>	<p>27.</p> <p>a. b. c. d</p>
<p>28. If $x = -2$, and $y = \frac{1}{4}$, then what is the value of the expression $x^2 - 2xy + 24y^2$?</p>	<p>28. 6.5 or $\frac{13}{2}$</p>
<p>29. The Twilight saga is 608 minutes total for all of the movies. If you began watching it at 6:00 p.m. on Friday, at what time (indicate a.m./p.m.) on what day would you finish if you never stopped?</p>	<p>29. 4:08 am Saturday</p>
<p>30. A student has 7 quizzes that average 91% exactly. The teacher decided to count one of these quizzes twice, making the average go down to 90%. What was the score of the quiz that was counted twice?</p>	<p>30. 83%</p>
<p>31. Combine the following into a single expression of the form $a\sqrt{b}$.</p> $\sqrt{7} - \sqrt{28} - \sqrt{63}$	<p>31. $-4\sqrt{7}$</p>
<p>32. Simplify the rational expression: $\frac{(x-2)(x^2-x-6)}{(3x^2-12)(x-3)}$</p>	<p>32. $\frac{1}{3}$</p>
<p>33. How many numbers are there between 25 and 125 that are multiples of 2 or 3 but not both?</p>	<p>33. 67</p>
<p>34. Express as a simple fraction: $0.\overline{3} + 0.\overline{17}$</p>	<p>34. $\frac{50}{99}$</p>

35. Factor: $(3x^2 - 2xy - 8y^2)$	35. $(3x+4y)(x-2y)$
36. Find a quadratic equation with lead coefficient 1 in the form $ax^2 + bx + c = 0$ whose solutions are $x = \frac{-3 \pm \sqrt{29}}{2}$	36. $x^2 + 3x - 5 = 0$
37. Find the sum of all possible values of the digit n such that the 5-digit number $219n5$ is divisible by 15	37. 12
38. Assuming x and y are positive, simplify the expression so that it is a simplified fraction with only positive integer exponents. $\left(\frac{4x^2}{9y^2}\right)^{-3/2}$	38. $\frac{27y^3}{8x^3}$
39. Of the 80 students in a class, one-fifth of them prefer orange soda, one-fourth prefer lemon-lime soda. Half of what remain prefer cola, and the other half prefer root-beer. (Dr. Pepper was not an option.) If making a pie-chart, how many degrees should be given to cola?	39. 99°
40. For what value of x will the solution of the following equation be $y = 3x$? $4x + y = 3(1 + x)$	40. $\frac{3}{4}$ or 0.75
41. If $x \heartsuit y = 2x - y^2$, then $3 \heartsuit (5 \heartsuit 4) = ?$	41. -30
42. What is the positive difference between the sum of the 6 smallest prime numbers and the sum of the three largest composite number less than 17?	42. 4
43. $1024 = 2^{10}$. 1 terabyte is 1024 gigabytes. 1 gigabyte is 1024 megabytes. 1 megabyte is 1024 kilobytes. 1 kilobyte is 1024 bytes. 1 byte is 8 bits. How many bits in a terabyte? Write the answer in the form 2^n .	43. 2^{43}
44. What is the smallest difference between factors of 2016? (example: $672 \times 3 = 2016$, $672 - 3 = \boxed{669}$)	44. 6
45. There are 216 stitches on a regulation baseball. If I can stitch 4 stitches in 25 seconds, how long will it take to stitch a baseball? Write the answer in minutes and seconds.	45. 22 mins 30 secs
46. The sum of two natural numbers is 96. Their difference is 16. What is the smaller number?	46. 40
47. Three fair dice are thrown. What is the probability that the product of the three numbers is a multiple of 5? Write the answer as a reduced fraction.	47. $\frac{91}{216}$
48. Consider the shape illustrated below made of a square (4 meter on a side) and a right triangle (3 meter base). What is the minimum amount of fence needed to build a pen as illustrated? 	48. 24 meters
49. What is the sum of all factors of the number 2016? (Including 1 and itself).	49. 6552
50. 2016 has only 2, 3, and 7 as prime factors. What are the next three numbers to have only these same three prime factors?	50. 2058, 2268, 2352

