BECA / IB Mathematics Applications and Interpretation Name:
18 October 2021

Assessment of prior knowledge

1. Solve for x

   (a) $3x - 7 = -4$

   (b) $\frac{3}{5}x = 30$

   (c) $2(x + 5) = 12$

   (d) $\frac{2}{3}(x + 7) = x - 4$

2. The perimeter of a rectangle is 54 centimeters. If its length is 6 cm., what is its width?

3. Round to the *nearest hundredth*: 9.7549

4. Round to the *nearest tenth*: 10.974

5. Round to the *nearest thousand*: 147,321.94

6. Express as a number: 1.27×10^4

7. Express as a number: 3.3×10^{-2}

8. Express in scientific notation: $47,200$

9. Simplify each of these expressions employing absolute value.

   (a) $|-7|$

   (b) $|2-5|$

   (c) $|-3+2|$

   (d) $|-4|-|7|$

10. Use a calculator to simplify each expression to a decimal, to the *nearest hundredth*.

    (a) $3.4 \times 9.8 \times 4.3 \times 0.15$

    (b) $13.65 + \frac{1}{2}(8.6)$

    (c) $12 + \frac{1}{4}\sqrt{12}$

    (d) $\frac{1}{3}\pi(3.4)^2(6.1)$

11. Simplify each of the following to a fraction.

    (a) $2 + \dfrac{3}{5} - \dfrac{1}{4}$

    (b) $\dfrac{1}{4} \times \dfrac{3}{2} + \dfrac{5}{2} \times \dfrac{1}{4}$

12. Simplify each radical. (do not convert to a decimal)

    (a) $\sqrt{50}$

    (b) $2\sqrt{3} - \sqrt{3}$

    (c) $\sqrt{27}$

    (d) $\dfrac{\sqrt{18}}{\sqrt{2}}$

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13. Solve for each system of equations for x and y.

    (a) $2x + y = 7$
    $x - y = -1$

    (b) $x - 3y = -2$
    $2x + y = 31$

14. Roll a regular, six-sided die. What is the probability of rolling an even number?

15. Two coins are flipped. What is the probability of getting one heads and one tails?

16. Using the metric system, what would be the most natural units of measure for each quantities of an automobile.

    (a) Its weight

    (b) The capacity of the gas tank

    (c) The length of the car overall

    (d) Its top speed

17. Given the following data, find each summary statistic: $7, 7, 9, 13, 17$

    (a) The mean

    (b) The median

    (c) The mode

    (d) The range

18. Given the following two sets:
    $A = \{1, 3, 5, 7\}$
    $B = \{0, 1, 7, 9\}$

    (a) Find $A \cap B$

    (b) Find $A \cup B$

    (c) Place the elements of A and B in the appropriate regions in the Venn diagram below.