Instructions: Answer each question on loose leaf, quad-ruled (graph paper), headed properly and written in lead-graphite. Remember to fold paper along the center, work exercises in order top to bottom, left column then right column. Staple multiple pages

1) For each step identify the property/axiom that justifies each step:

$$6 - 3(4 - 2x) + 9x$$

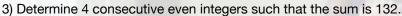$$6 + {}^-3(4 + {}^-2x) + 9x$$

a) $6 + {}^-12 + 6x + 9x$

$${}^-6 + 6x + 9x$$

$${}^-6 + 15x$$

$$16 = \sqrt{256}$$

2) State the property that justifies the statement: $16 = 4^2$

$$4^2 = \sqrt{256}$$

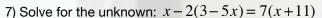3) Determine 4 consecutive even integers such that the sum is 132.

4) Determine 4 consecutive odd integers such that the sum is 136.

5) Translate into a math statement: *"4 times the sum of a number and 6 is 8 less that three-fourths the difference of the same number and 5."*

6) Solve for the unknown; express your solution as a reduced improper fraction and a decimal rounded to the nearest 10th: $8 - \dfrac{6}{5}n = -3$

7) Solve for the unknown: $x - 2(3 - 5x) = 7(x + 11)$

8) A square has an area of $784\,mm^2$; determine its perimeter.

9) The length of a couch is 200 centimeters, which is 16 centimeters less than 3 times the width of a matching chair. How wide is the chair?

10) The Distant Worlds 2 Expedition ends at Beagle Point in The Solitude Void of the Milky Way Galaxy, 65,000 light years away from Earth. Mr. Ford has traveled 15,000 light years so far. If his spacecraft can travel 60 light years per jump, How many jumps must he make to reach Beagle Point? Model this as an equation, then solve for the number of jumps he must make.
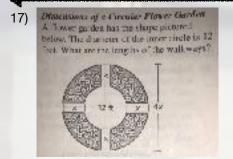
11) $\left(4 \bullet 10^3\right) \bullet \left(8 \bullet 10^5\right) =$

12) $\dfrac{4 \bullet 10^8}{8 \bullet 10^5} =$

13) Write as the product of its simplest rational and irrational factors: $\sqrt{125}$

14) Simplify: write with positive exponents: $\dfrac{\left(5x^{-4}\right)^3}{25x^{-10}}$

15) Estimate the irrational expression: $4\sqrt{10}$

16) Add: write your answer in standard form and scientific notation: $\left(7.4 \bullet 10^4\right) + \left(9 \bullet 10^5\right)$

17)

Dimensions of a Circular Flower Garden
A flower garden has the shape pictured below. The diameter of the inner circle is 12 feet. What are the lengths of the walkways?

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18) The longest sides of a rectangle are 3in. less than six times the length of the shorter sides. The perimeter of the rectangle is 50in. Find the measures of the sides of the rectangle.

19) Solve $E = \dfrac{1}{2}mv^2$ for 'v'.

20) Solve: $\dfrac{4n - 28}{3} = 2n$

21) The greater of two consecutive even integers is 20 more than twice the smaller. Determine the integers.

22) What number family best describes the number of CCCS students on the GPA board? Justify with evidence.

23) What number family best describes the GPAs on the GPA board? Justify with evidence.

24) One Light Year is $9.4607 \cdot 10^{12}\,km$; Determine the kilometers in 15,000 Light Years; write your answer in standard form and scientific notation.

25) $3x + 2\left[1 - 3(x + 2)\right] = 2x$

$x =$

26) Here is a student's procedure to solve an equation:

$5(x - 2) = 8$

$5x - 2 = 8$

$5x = 8 + 2$

$5x = 10$

$x = 2$

Did the student error? If so, where?

A) Yes, the student did not distribute correctly.
B) Yes, the student should not combine '5' and 'x' to '5x'.
C) No, the student is correct.
D) Yes, but made a different mistake.

27) A 2000 Liter (L) tank containing 500L of water is being filled with water at a rate of 75L per minute from a full 1600L tank. How long (time) will it take for the two tanks to have the same amount of water?