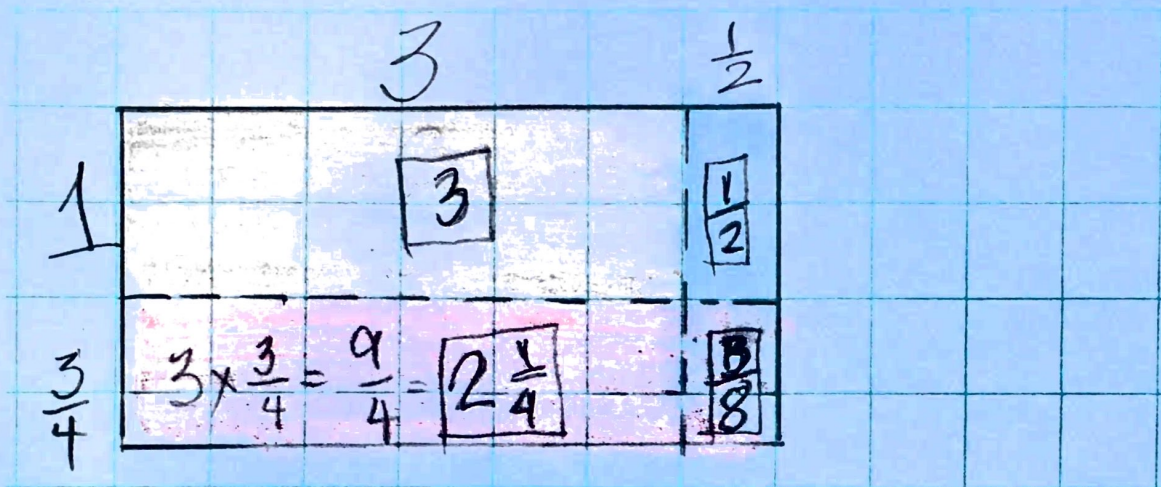Name _____ANSWERS_____ Date _____

1. Use your ruler to draw a rectangle that measures $3\frac{1}{2}$ by $1\frac{3}{4}$ inches, and find its area.
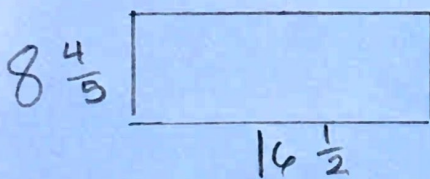

3

$2\frac{1}{4} = \frac{2}{8}$

$\frac{1}{2} = \frac{4}{8}$

$\frac{3}{8} = \frac{3}{8}$

$5\frac{7}{8} = \boxed{6\frac{1}{8}}$

$$3\frac{1}{2} \times 1\frac{3}{4} = 3 + \frac{9}{4} + \frac{1}{2} + \frac{3}{8} = 5 + \frac{2}{8} + \frac{4}{8} + \frac{3}{8} = 5 + \frac{9}{8} = \boxed{6\frac{1}{8}}$$

$2\frac{1}{4}$

2. Heather has a rectangular yard. She measures it and finds out it is $16\frac{1}{2}$ feet long by $8\frac{4}{5}$ feet wide.

a. She wants to know how many square feet of sod she will need to completely cover the yard. Draw the yard, and label the measurements.

$8\frac{4}{5}$

$16\frac{1}{2}$

$$\left(12\frac{4}{5}\right)(4)\left(\frac{2}{5}\right)$$

$$16\frac{1}{2} \times 8\frac{4}{5} = 128 + \frac{64}{5} + \frac{8}{2} + \frac{4}{10} = 144 + \frac{6}{5} =$$

$$\boxed{145\frac{1}{5} ft^2}$$

$5\overline{)64}$ ... $\frac{12}{64}$
$\frac{5}{14}$
$\frac{10}{4}$

b. How much sod will Heather need to cover the yard?

Heather needs 146 feet^2 of sod

c. If each square foot of sod costs 65 cents, how much will she have to pay to cover her yard?

$146 ft^2$

65 cents

She will have to pay $94.90

$$\begin{array}{r} 146. \\ \times 0.65 \\ \hline 730 \\ 876 \\ \hline 94.90 \end{array}$$

3. A rectangular container that has a length of 20 cm, a width of 15 cm, and a height of 18 cm is filled with water to a depth of 14 cm. When an additional 6.5 liters of water are poured into the container, some water overflows. How many liters of water overflow the container? Use words, pictures, and numbers to explain your answer. (Remember: 1 cm³ = 1 mL.)

18cm
I 14cm
20cm 15cm
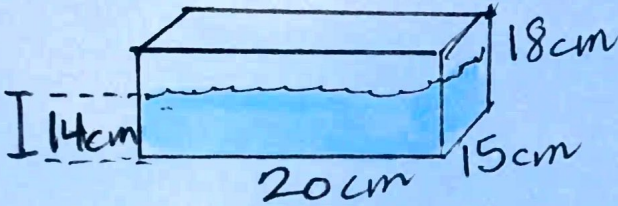
5.3 Liters overflow

A) $(20 \times 15) \times 18 =$
$300 \times 18 = 5,400 cm^3$

B) $20 \times 15 \times 14 =$
$300 \times 14 = 4,200 cm^3$
$5400 - 4200 = 1,200 cm^3$
$6500 - 1200 = 5,300 cm^3$

4. Jim says that a $3\frac{1}{2}$ inch by $4\frac{1}{4}$ inch rectangle has a section that is 3 inches × 4 inches and a section that is $\frac{1}{2}$ inch × $\frac{1}{4}$ inch. That means the total area is just the sum of these two smaller areas, or $12\frac{1}{8}$ in². Why is Jim incorrect? Use an area model to explain your thinking. Then, give the correct area of the rectangle.
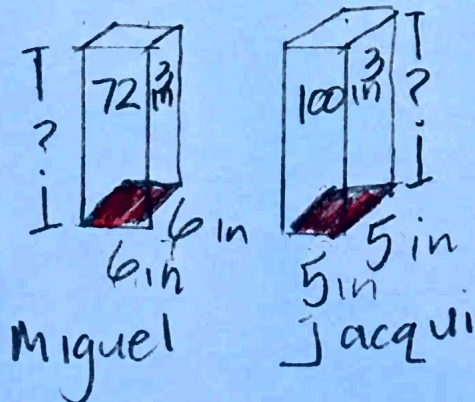
4   ¼

3   $12 in^2$ $\frac{3}{4}$

½   2 $\frac{1}{8}$
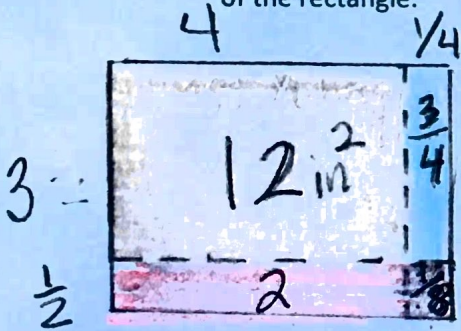
$3\frac{1}{2} \times 4\frac{1}{4} = 12 + \frac{3}{4} + \frac{4}{2} + \frac{1}{8} = 14 + \frac{6}{8} + \frac{1}{8} =$

Jill is wrong because there are not only two small areas. There are four. Jill is missing 2 and $\frac{3}{4}$

$\boxed{14\frac{7}{8}}$

$12 + 2 + \frac{3}{4} + \frac{1}{8} = 14 + \frac{6}{8} + \frac{1}{8} = 14\frac{7}{8}$

5. Miguel and Jacqui built towers out of craft sticks. Miguel's tower had a 6-inch square base. Jacqui's tower had a 8-inch square base. If Miguel's tower had a volume of 72 cubic inches and Jacqui's had a volume of 100 cubic inches, whose tower was taller? Explain your reasoning.

T 72 in³ ? ↓ 6 in, 6 in   Miguel

T 100 in³ ? ↓ 5 in, 5 in   Jacqui

Miguel $72 \div 36 = 2 in$

Jacqui $100 \div 25 = 4 in$

$36\overline{)72}$ $\begin{array}{r} 2 \\ 72 \\ \underline{72} \\ 0 \end{array}$

$25\overline{)100}$ $\begin{array}{r} 4 \\ 100 \\ \underline{100} \\ 0 \end{array}$

I divided the volume by the area of the base.

Jacqui's tower is taller.

6. Read the statements. Circle True or False. Explain your choice for each using words and/or
    pictures.

    a. All squares are quadrilaterals.   (True)   False

    A square is a quadrilateral
    because it has 4 sides.

    b. All squares are trapezoids.   (True)   False

    Trapezoids have at least
    one set of parallel lines
    Squares are trapezoids

    c. Squares are rhombuses, but not parallelograms.   True   (False)

    Squares are rhombuses because
    they have 4 equal sides, and they
    are parallelograms because they have 2 sets of parallel
                                                                                      lines.
    d. The opposite angles in a parallelogram have the same measure.   (True)   False

    The opposite angles of parallelograms
    have the same measure because there
    are two sets of equal sides and two sets
    of parallel lines

    e. Because the angles in a square are 90° each, it is not a parallelogram.   True   (False)

    A square has 2 sets of parallel
    lines. Having angles of 90° each does not disqualify
                        squares as parallelograms.

    f. The sum of the angle measures of any rhombus is greater than the sum of the angle measures
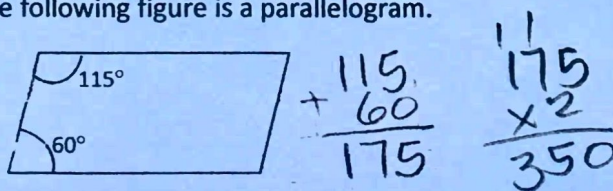   of any trapezoid.   True   (False)

    The sum of the four angles of all
    quadrilaterals is the same: 360°

    g. The following figure is a parallelogram.   True   (False)

    115°   115   175
                          + 60   × 2
    60°   ─────   ─────
                            175   350

    This figure does not have
    two sets of parallel lines