LESSON

• **Lesson: Percents greater than 100**

A.   Remind students that 100% of a quantity is the <u>whole thing</u> or <u>all of the quantity</u>. So <u>100% of any number</u> is <u>equal to the number</u>.

It's easy to see that 200% of a number is twice the number; 300% of a number is 3 times the number; and 700% of a number is 7 times the number; etc.:

$$100\% \text{ of } 6.93 = 6.93 \qquad (1 \times 6.93)$$
$$200\% \text{ of } 4\tfrac{3}{7} = 8\tfrac{6}{7} \qquad (2 \times 4\tfrac{3}{7})$$
$$600\% \text{ of } 9 = 54 \qquad (6 \times 9)$$
$$300\% \text{ of } j = 3j$$

B.   Pose this problem to the class:

Sam's weekly salary is $320. Mike's weekly salary is 75% of Sam's salary, and Jane's weekly salary is 200% of Mike's salary.

What is Jane's weekly salary?

Guide students to a solution through a series of questions like these:

    i.   What fraction is equivalent to 75%?

    ii. What is $\tfrac{3}{4}$ of $320?

    iii. What is 2 x $240?

So Jane's weekly salary is $480.

C.   Pose this problem:

The price of a house in Connecticut is 420% of the price of a comparable house in Mississippi.

The Jones house in Hattiesburg, Mississippi is valued at $150,000. What would be the value of a comparable house in Connecticut?

Guide students to a solution through a series of questions such as these:

    i.   What is 400% of the value of the Jones house?

    ii. What is 20% of the value of the Jones house?

    iii. What is 420% of the value of the Jones house?

    iv. So what will be the price of a comparable house in Connecticut?

D.   This is another way of <u>thinking about</u> the problem posed in part C:

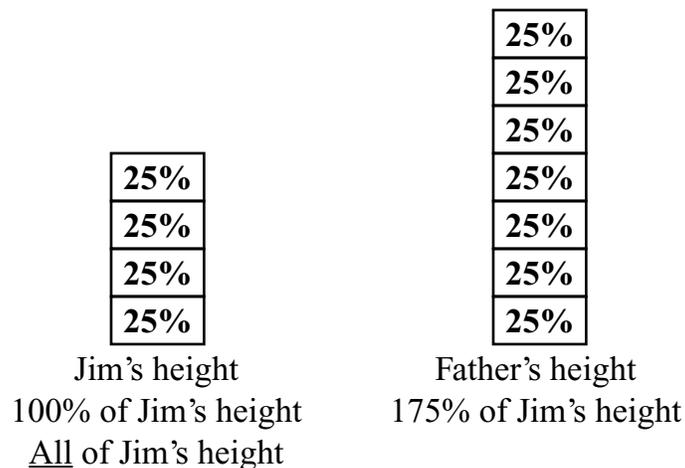<u>For each $100</u> of value of the Jones house, a comparable house in Connecticut will have $420 of value.

Since the Jones house is worth 1500 chunks of $100, the comparable house in Connecticut is worth 1500 chunks of $420 – which is 1500 x $420, or $630,000.

Emphasize that the ways of thinking about the problem, and the computations performed, in parts C and D are very different. But both lead to correct and meaningful solutions.

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We automatically think of a third strategy: translate 420% to 4.2 then multiply 4.2 x $150,000. This is the <u>traditional</u> process. But it requires students to make the correct translation of 420% to 4.2, then to multiply by a decimal. If this is the only strategy that students ever see, those who cannot successfully <u>do</u> these particular computations are being deprived of learning a very important application of percent. So although we have not yet addressed these traditional computational strategies, students can get answers to the problems posed by applying the Distributive Property and using proportional reasoning.

167. Mr. Jackson's height is 175% of his son Jim's height. (This is shown in the picture below.)

	25%
	25%
	25%
25%	25%
25%	25%
25%	25%
25%	25%

Jim's height   Father's height
100% of Jim's height   175% of Jim's height
<u>All</u> of Jim's height

Jim is 44 inches tall. What is his father's height?