

## 0.7 Prelude: Algebraic Notation

## Practice exercises

1. Since she has been pregnant, Zoe has gained the recommended  $\frac{1}{2}$  pound per week. She weighted 153 pounds at the start of her pregnancy. That means when she is  $W$  weeks pregnant, that Zoe weighs

$$153 + \frac{1}{2}W$$

use  $W = 40$

What does this expression say Zoe will weigh when she's 40 weeks pregnant?

*Story also appears in 0.4 #3 and 4.3 #3*

$$153 + \frac{1}{2}(40) = 153 + 1 \div 2 \times 40 = \boxed{173 \text{ pounds}}$$

hidden multiplication!

remember the fraction tells us to divide

2. Jody is using small wooden balls to make noses for her knitted gnomes. She figured out that she can calculate the weight of each ball (in ounces) as  $.2 \times B \wedge 3$ . Write this expression in algebraic notation.

*Story also appears in 0.6 #1*

$$\boxed{.2B^3}$$

exponent written as a superscript (higher and smaller)

hidden multiplication

3. Astra lives in a 1-bedroom apartment where they pay \$825 per month in rent. Thanks to new rent stabilization laws, Astra's rent can only increase 3% per year. That means after  $Y$  years, their rent will be at most

$$825(1.03^Y)$$

What does this expression say her rent could be in 5 years?

*Story also appears in 0.3 #2*

use  
 $Y=5$

$$825(1.03^5) = 825 \times 1.03^5 = 956.4011... \approx \boxed{\$956/\text{month}}$$

hidden multiplication

superscript means exponent

4. "Rose gold" is a mix of gold and copper. If we mix 2 grams of gold with  $C$  grams of copper, the percentage of the resulting alloy that is gold is given by the expression

$$\frac{200}{2+C}$$

What does this expression say the percentage of gold will be if we add 7 grams of copper? ← use  $C=7$

*Story also appears in 0.4 #2, 2.3 #2, and 4.1 Exercises*

$$\frac{200}{2+(7)} = 200 \div (2+7) = 22.22... \approx \boxed{22\%}$$

don't need parentheses here

do need parentheses around bottom of fraction so does + before  $\div$