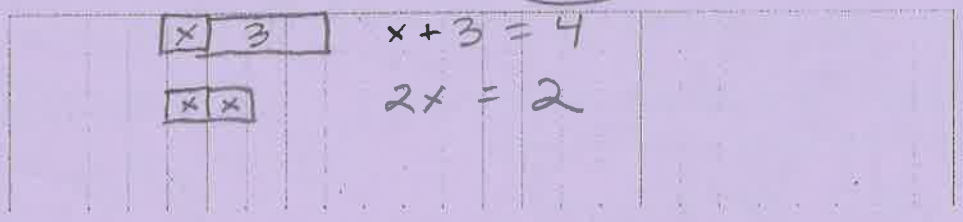
Key

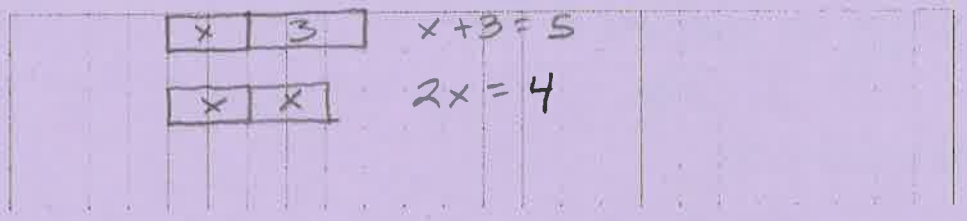
NAME DATE PERIOD

Unit 6, Lesson 8: Equal and Equivalent

1. a. Draw a diagram of $x + 3$ and a diagram of $2x$ when x is 1.

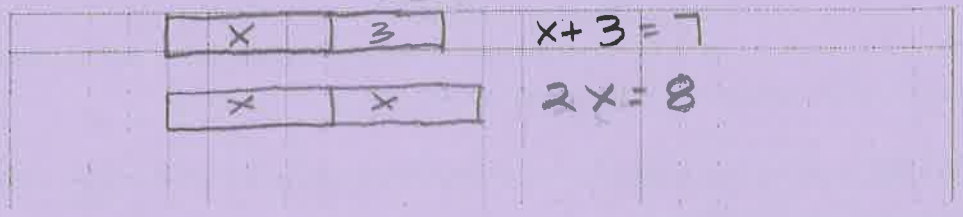


b. Draw a diagram of $x + 3$ and of $2x$ when x is 2.



c. Draw a diagram of $x + 3$ and of $2x$ when x is 3.

d. Draw a diagram of $x + 3$ and of $2x$ when x is 4.



e. When are $x + 3$ and $2x$ equal? When are they not equal? Use your diagrams to explain.

When $x = 3$ not for other values of x

2. a. Do $4x$ and $15 + x$ have the same value when x is 5? $4(5) = 20$ $15 + 5 = 20$ yes

b. Are $4x$ and $15 + x$ equivalent expressions? Explain your reasoning.

only for $x = 5$ so no.

3. a. Check that $2b + b$ and $3b$ have the same value when b is 1, 2, and 3.

$b=1$ $\quad 2(1)+1=3 \quad 3(1)=3$

$b=2$ $\quad 2(2)+2=6 \quad 3(2)=6$

$b=3$ $\quad 2(3)+3=9 \quad 3(3)=9$

b. Do $2b + b$ and $3b$ have the same value for all values of b? Explain your reasoning.

yes because $2b+b$ is equivalent to $3b$

c. Are $2b + b$ and $3b$ equivalent expressions?

yes

4. 80% of x is equal to 100.

a. Write an equation that shows the relationship of 80%, x, and 100.

(from Unit 6, Lesson 7)

$.8\overline{)100}$

$.8x = 100$

$\frac{8}{10}x = 100$

$\frac{80}{100}x = 100$

$\frac{4}{5}x = 100$

b. Use your equation to find x.

$\frac{100}{.8} = 125$

$100 \div \frac{4}{5}$

$\frac{100}{1} \cdot \frac{5}{4} = \frac{500}{4} = 125$

5. For each story problem, write an equation to represent the problem and then solve the equation. Be sure to explain the meaning of any variables you use.

a. Jada's dog was $5\frac{1}{2}$ inches tall when it was a puppy. Now her dog is $14\frac{1}{2}$ inches taller than that. How tall is Jada's dog now?

$5\frac{1}{2} + 14\frac{1}{2} = x \qquad x - 14\frac{1}{2} = 5\frac{1}{2}$

$20 = x$

b. Lin picked $9\frac{3}{4}$ pounds of apples, which was 3 times the weight of the apples Andre picked. How many pounds of apples did Andre pick?

$3x = 9\frac{3}{4}$

$x = 9\frac{3}{4} \div 3$

think $3\frac{1}{4}$ lbs

$\frac{39}{4} \div 3$

$\frac{39}{4} \cdot \frac{1}{3} = \frac{39}{12} =$

$3\frac{3}{12}$ or $3\frac{1}{4}$