4. ① ⑧ × 0.⑥

1 +1
4 1 8
× 6
2 5.0 8

2.5 0 8

① ignore the decimals

② multiply

③ Count digits to the right of each #

④ Starting all the way to the right and move decimal that many #s.

0.⑦ × 0.⑥ × 0.⑤

7 × 6 × 5

4 2 × 5

1
4 2
× 5
2 1 0

.21 0

$$\begin{array}{r} 2.8 \\ 7\overline{)19.6} \\ -14\downarrow \\ \hline 56 \\ -56 \\ \hline 0 \end{array}$$

16.7
0.5

$$\begin{array}{r} 33.4 \\ 0.5\overline{)16.7}0 \\ -15\downarrow \\ \hline 17 \\ -15\downarrow \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

① If number on outside has a decimal move it far right.

② move the decimal inside the same number of times you did outside

③ Do long division

④ If a remainder add zeros until you dont.

1|14

Lesson 6: Position, Speed, and Direction

Let's use signed numbers to represent movement.

6.1: Distance, Rate, Time

1. An airplane moves at a constant speed of 120 miles per hour for 3 hours. How far does it go?

$\times 120$
3
360 miles

2. A train moves at constant speed and travels 6 miles in 4 minutes. What is its speed in miles per minute?

$4 \overline{)6.0}$ → 1.5
-4
20
-20
0

$\frac{6 \text{ mi}}{4 \text{ min}} \div 4 = \frac{1.5 \text{ mi}}{1 \text{ min}}$

1.5 mi per min

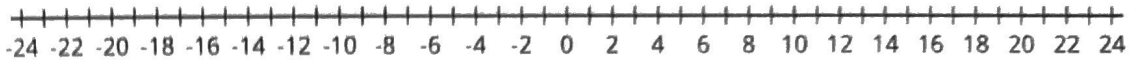
3. A car moves at a constant speed of 50 miles per hour. How long does it take the car to go 200 miles?

$\frac{200 \text{ mi}}{50} = 4$ hours to go 200 mi

hour	miles
1	50
4	200

×4 (1 → 4), ×4 (50 → 200)

6.2: Going Left, Going Right



1. After each move, record your location in the table. Then write an expression to represent the ending position that uses the starting position, the speed, and the time. The first row is done for you.

starting position	direction Right + Left −	speed (units per second)	time (seconds)	ending position (units)	expression
0	right	5	3	+15	$0 + 5 \cdot 3$
0	left	4	6	−24	$0-4 \cdot 6$
0	right	2	8	+16	$0+2 \cdot 8$
0	right	6	2	+12	$0+6 \cdot 2$
0	left	1.1	5	−5.5	$0-1.1 \cdot 5$

2. How can you see the direction of movement in the expression?

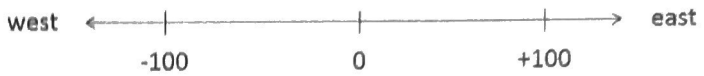
− means left

+ means right

3. Using a starting position p, a speed s, and a time t, write two expressions for an ending position. One expression should show the result of moving right, and one expression should show the result of moving left.

6.3: Velocity

A traffic safety engineer was studying travel patterns along a highway. She set up a camera and recorded the speed and direction of cars and trucks that passed by the camera. Positions to the east of the camera are positive, and to the west are negative.



Vehicles that are traveling towards the east have a positive velocity, and vehicles that are traveling towards the west have a negative velocity.

1. Complete the table with the position of each vehicle if the vehicle is traveling at a constant speed for the indicated time period. Then write an equation.

West ← negative

east → positive

velocity (meters per second)	time after passing the camera (seconds)	ending position (meters)	equation describing position
+25	+10	+250	25 • 10 = 250
-20	+30	−600	-20 • 30 = -600
+32	+ 40	+1280	32 • 40 = 1280
-35	+20	-700	-35 • 20 = -700
+28	0	0	28 • 0 = 0

multiply

1
35
20
00
700
700

2. If a car is traveling east when it passes the camera, will its position be positive or negative 60 seconds after it passes the camera? If we multiply two positive numbers, is the result positive or negative?

3. If a car is traveling west when it passes the camera, will its position be positive or negative 60 seconds after it passes the camera? If we multiply a positive and a negative number, is the result positive or negative?