Converting Rates

Two steps for every rate. Before each step, write bigger or smaller. Conversion facts: 1 mile = 5,280 feet; 1 hour = 60 minutes; 1 minute = 60 seconds; 1 day = 24 hours; 1 km = 1,000 m; 1 gallon = 16 cups = 4 quarts; 1 foot = 12 inches.

Name _____ Date _____

Words we use

say the math word, then the plain English

WORD	PLAIN ENGLISH	WHAT YOU DO
Convert	Change to different units without changing the amount.	One unit at a time: multiply or divide by the conversion fact.
Conversion fact	A fact like 1 mile is 5,280 feet.	Look it up in the box. You do not have to memorize it.
Unit rate	How much for one.	Keep it a rate the whole way: feet per hour, then feet per minute.
Sense check	Asking whether the number should get bigger or smaller.	Smaller units mean more of them. A shorter time means less happens in it.

Part A Zoomy

1. A garden snail's top speed is 0.029 miles per hour. Step 1: miles to feet. Bigger or smaller? Compute.

2. Step 2: hours to minutes. Bigger or smaller? Compute. How far does Zoomy go in a one-minute race?

Part B Predict first

CHANGE	BIGGER OR SMALLER?	WHY
feet per hour to feet per minute		
cups a day to gallons a day		
meters per second to meters per minute		
dollars per hour to cents per hour		

Part C Two steps each

1. A player sprints 6 meters per second. Meters per minute? Kilometers per hour?

2. A faucet drips 2 cups an hour. Cups a day? Gallons a day?

3. A toy train moves 30 inches per minute. Feet per hour?

4. A job pays $12 an hour. Cents per minute?

Part D Exit ticket

1. A video game character runs 15 feet per second. How many feet per minute?

2. Feet per hour to feet per minute: bigger or smaller, and why?

3. What does convert mean?

Answer key

Part A. 1. Bigger; $0.029 \times 5{,}280 = 153.12$ feet per hour. 2. Smaller; $153.12 \div 60 \approx 2.55$ feet per minute, about 2 and a half feet.

Part B. Smaller (a minute is shorter). Smaller (a gallon is bigger). Bigger (a minute is longer). Bigger (a cent is smaller).

Part C. 1. 360 meters per minute; 21.6 kilometers per hour. 2. 48 cups a day; 3 gallons a day. 3. 2.5 feet per minute, 150 feet per hour. 4. 1,200 cents per hour, 20 cents per minute.

Part D. 1. 900 feet per minute. 2. Smaller; a minute is shorter than an hour. 3. Change to different units without changing the amount.