Lesson 6: A Day at the Park

While they wait for Sam, the group decides to look at a map outside the park about 200 feet from the park gate.

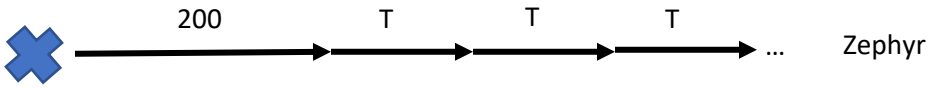
Using their thumbs, Gabriel and Kayla measure the distance to three different rides: Zephyr, Mystic Timbers, and The Beast.

1. a. First, find the location of the Zephyr ride.

   b. Record the distance from the X, the location of the map, to the entrance.

   c. Measure the distance from the entrance to Zephyr with the width of your thumb.

   d. Make an arrow diagram that records this information: the distance from map outside the park to the park entrance, and the distance to the Zephyr.



2. Compare your arrow diagram with the arrow diagrams made by some of your classmates.

a. Do you notice any differences among your arrow diagrams?

b. If your arrow diagrams are different, describe some reasons for these differences.


MAP LEGEND
Fast Lane Purchase Location
FunPix Location
Guest Services
Restrooms
Height Station
Locker Rental
Lost Parents
Designated Smoking Area
Family Care Center by Fischer Homes
ATM
Lost & Found
Wheelchair Rental
Soak City Changing Area
Service Animal Relief Station
First Aid
Automated External Defibrillator (AED)
Dining, Shopping, Games & Show Venues
INTERNATIONAL STREET
Food & Beverages
G9 Funnel Cakes
G10 Auntie Anne's® • Starbucks® Wishbone Grill
G11 International Restaurant Skyline Chili®
H9 The French Corner
H10 Graeter's® Ice Cream
H11 LaRosa's® Pizzeria • Cinnabon®
I8 Chick-fil-A®
Shopping
G9 Emporium • Creative Glass
G11 Kings Island Collections
H10 Sweet Spot
H11 Build-A-Bear Workshop® • Animal Fair Kings Island Trading Company KI Essentials
Attractions & Amenities
F11 Kings Island Theater • Help Center
H9 International Street Bandstand
I8 International Showplace Theatre
ACTION ZONE
Food & Beverages
D10 Ice Scream Zone
E10 Chicken Shack
Shopping
D10 Coaster Connection
Attractions & Amenities
D9 Banshee® Arcade
OKTOBERFEST
Food & Beverages
F8 Hank's Mexican Grill
F9 Bier Garten
F10 Festhaus • LaRosa's® Pizzeria Panda Express®
Shopping
F8 Airbrush
Attractions & Amenities
E8 Rope Ladder Challenge
E10 Caricature Drawing
F10 Festhaus Stage • Age & Weight Game
CONEY MALL
Food & Beverages
F7 Subway® • Coney Bar-B-Que
G6 Coney Treats
G7 Skyline Chili®
H6 Jukebox Diner • Ralph's Ice Cream
Shopping
F8 Coney Confections
Attractions & Amenities
E8 Coney Mall Basketball
F6 Coney Arcade & Games
F7 Midway Games
G6 Coney Mall Basketball Midway Games • Age & Weight Game
H6 Three-Point Challenge
AREA 72
Food & Beverages
E5 Meteor Canteen
RIVERTOWN
Food & Beverages
I6 LaRosa's® Pizzeria
I7 Paradise Island
J6 Auntie Anne's®
J7 Miami River Brewhouse Tom + Chee®
K6 Rivertown Potato Works Rivertown Funnel Cakes
Shopping
J7 Diamondback Trading Post
Attractions & Amenities
I6 Age & Weight Game
J6 Antique Photos • Soccer Challenge Rivertown Arcade & Games
PLANET SNOOPY™
Food & Beverages
J8 Ice Cream • Planet Snoopy™ Grill
J11 Snoopy™ Snow Cones
K9 Snoopy™ Treats Snoopy's® Snack Shack
Shopping
J9 Snoopy™ Boutique
Attractions & Amenities
I9 PEANUTS™ Showplace
K9 Midway Games
L9 PEANUTS™ Playhouse
PICNIC GROVE
Catered Event Space
M9 Picnic Grove
WINDSEEKER
KINGS MILLS ANTIQUE AUTOS
THE BEAST
ORION
SHAKE, RATTLE & ROLL
RIVERTOWN
FLIGHT OF FEAR
AREA 72
ZEPHYR
WHITE WATER CANYON
CONEY MALL
DODGEM
BACKLOT STUNT COASTER
K.I. & MIAMI VALLEY RAILROAD
THE RACER
MONSTER
MYSTIC TIMBERS
ADVENTURE EXPRESS
SCRAMBLER
DIAMONDBACK
RACE FOR YOUR LIFE CHARLIE BROWN
GRAND CAROUSEL
LINUS' LAUNCHER
OKTOBERFEST
EIFFEL TOWER
FLYING ACE AERIAL CHASE
SALLY'S SEA PLANE
PICNIC GROVE
SLINGSHOT
THE GREAT PUMPKIN COASTER
KITE EATING TREE
BANSHEE
CHARACTER CAROUSEL
VIKING FURY
WOODSTOCK GLIDERS
THE BAT
DELIRIUM
BOO BLASTERS ON BOO HILL
WOODSTOCK WHIRLYBIRDS
PLANET SNOOPY
SNOOPY'S SPACE BUGGIES
XTREME SKYFLYER
SNOOPY VS. RED BARON
INTERNATIONAL STREET
SURF DOG
LINUS' BEETLE BUGS
CHARLIE BROWN'S WIND UP
PEANUTS 500
ACTION ZONE
JOE COOL'S DODGEM SCHOOL
DROP TOWER
CONGO FALLS
PEANUTS OFF-ROAD RALLY
SNOOPY'S JUNCTION
WOODSTOCK EXPRESS
TIMBERWOLF
INVERTIGO
KINGS ISLAND ENTRANCE & EXIT
Kings Island SOAK CITY

Map

3. Make an arrow diagram using your thumb for the distance to two other rides: Mystic Timbers and The Beast. Remember to include the distance from the map outside the park to the park entrance.

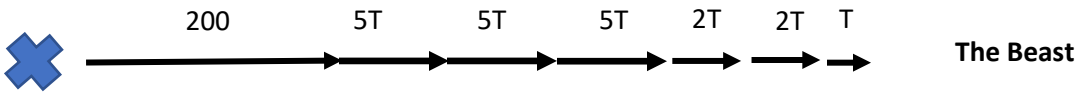
Mystic Timbers:

The Beast:

4. a. Which of these three rides is the farthest from the park entrance?

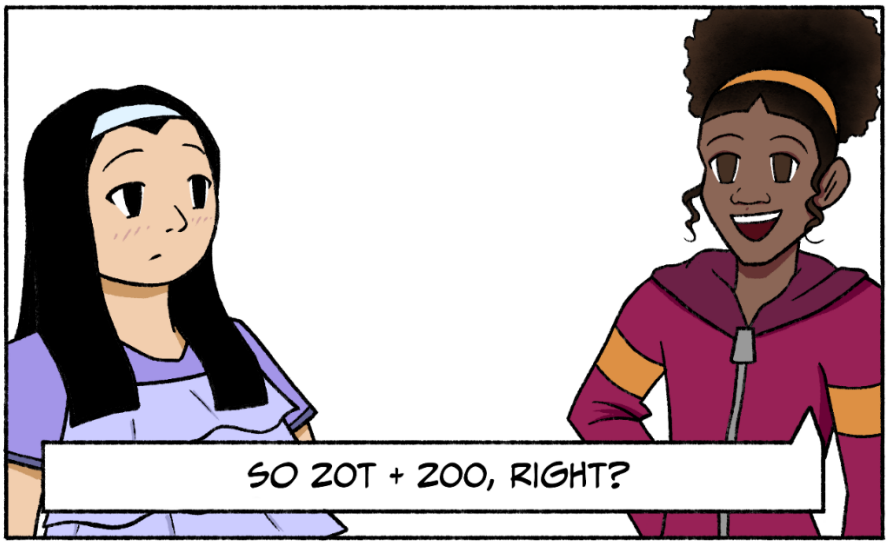
   b. Which of these three rides is the shortest distance from the park entrance?

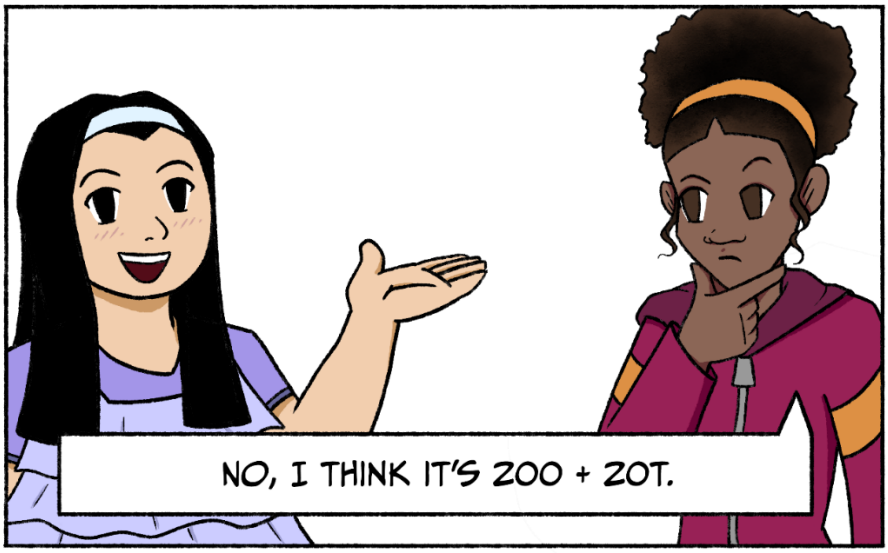
Gabriel drew the following arrow diagram for the distance to The Beast.



5. Compare Gabriel's arrow diagram to The Beast to your arrow diagram. Explain why you think your arrow diagram is different than Gabriel's.

Kayla and Alexis had different opinions about how to describe Gabriel's arrow diagram.





6. Who is correct, Alexis or Kayla? Explain.

Kayla and Alexis used **algebraic expressions** to describe the arrow diagram. You also used algebraic expressions to describe prices for a bag of groceries, and the total amount of calories for fast food meals.

7. For Gabriel's arrow diagram, identify the **variables** and **coefficients**. What do these represent in the problem?

Below are several other ways we can write Gabriel's arrow diagram as an algebraic expression:

i) T + 2T + 2T + 5T + 5T + 5T + 200

ii) 200 + 15T + 5T

iii) 5T + 2T + 5T + 2T + T + 200

iv) 2(5T + 2T) + T + 200

No matter what the variable T represents, all four of these expressions are equivalent. Every one of these expressions represents the same distance to The Beast.

8. Why are the expressions in *iii* and *iv* above equivalent?

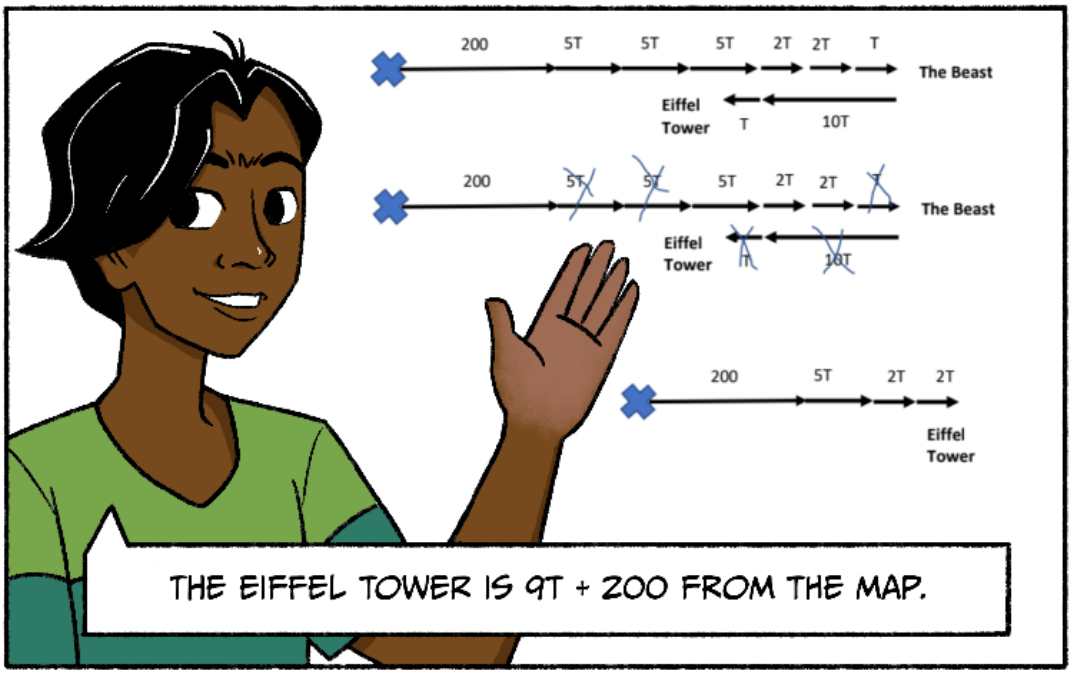
Imagine you are Gabriel waiting in line at The Beast and need to go to the restroom. You recall that there was a restroom on the way to The Beast. The restroom is a distance of 8T from The Beast.

9. How far is the restroom from the map outside the park? Show how you found your answer.

You also walk by the Eiffel Tower on the way to The Beast.

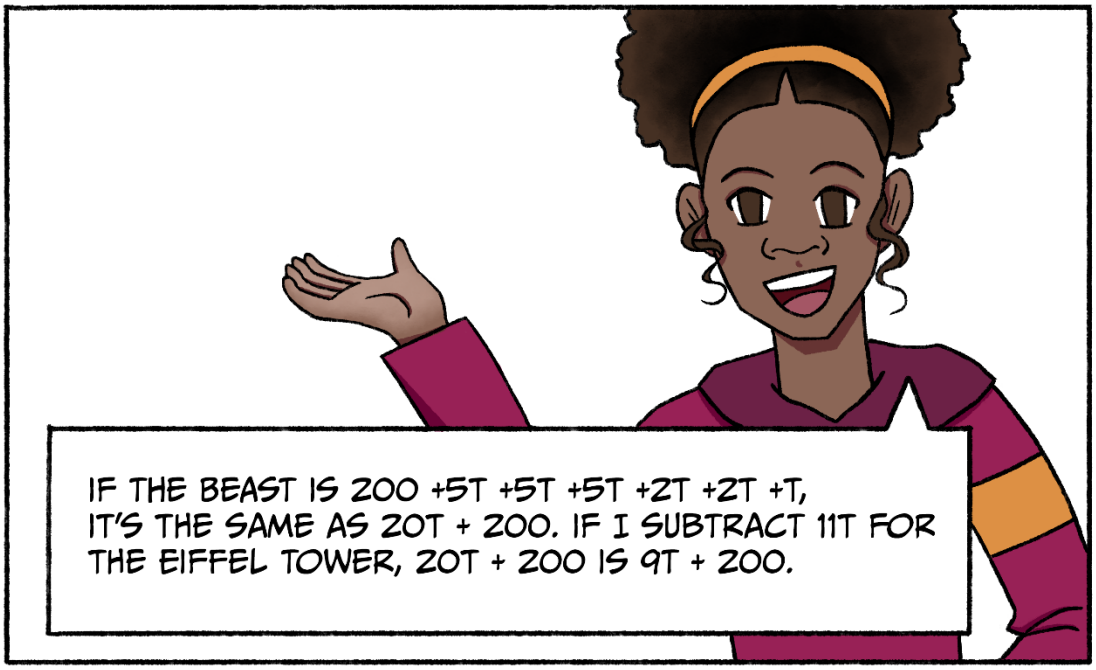
10. If the Eiffel Tower is a distance of 11T from The Beast, how far is the Eiffel Tower from the map outside the park? Explain how you found your answer.

Gabriel shows how he found the distance from the map to the Eiffel Tower using an arrow diagram.

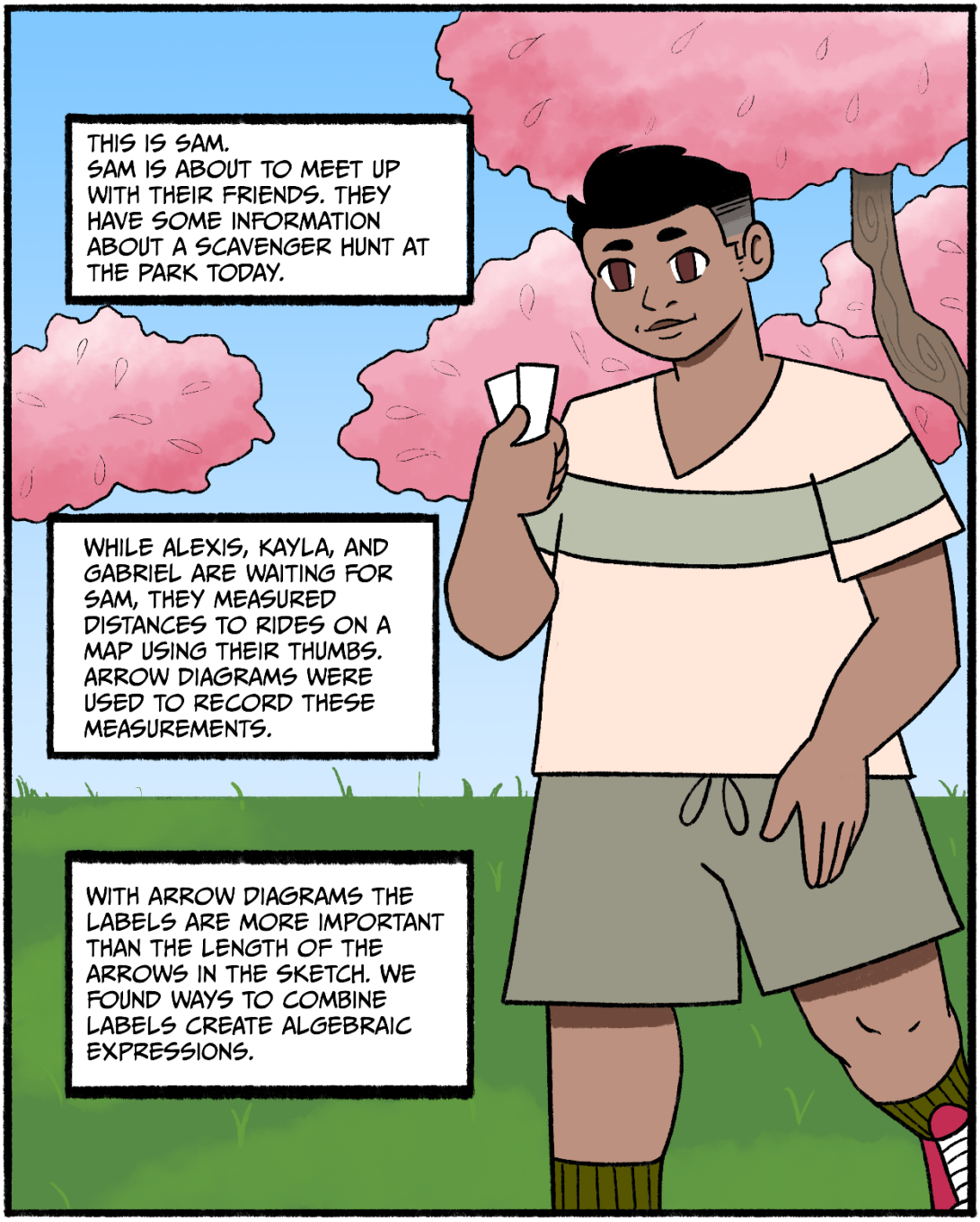


11. Explain what Gabriel did to find the distance from the map to the Eiffel Tower.

Kayla found the distance to the Eiffel Tower a different way.



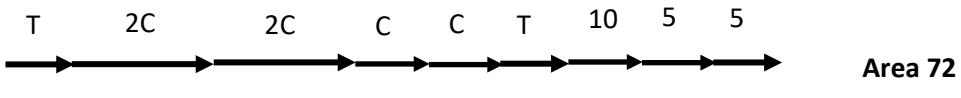
Summary



While Alexis, Gabriel and Kayla are waiting for Sam they measured distances to rides on a map using their thumbs. Arrow diagrams were used to record these measurements.

With arrow diagrams the labels are more important than the length of the arrows in the sketch. We found ways to combine labels create algebraic expressions.

12. Find three different ways to write the following arrow diagram as an algebraic expression



13. After arriving at Area 72, you realize that you dropped something near the Coney Mall. So, you walk back a distance of 3C and 2 feet. What is the expression for the distance from the map to Coney Mall? Show how you found this.