



# Back to the beach

**Outdoor temperatures may** still be chilly where you live, but solving these word problems can help your students remember what warm summer days feel like. Whether we enjoy jumping the waves or relaxing under an umbrella, we can always find a way to have fun at the beach. And we can learn a lot of math there, too.

## Grades 5–6

### WEEK 1



**Andy and his family** are making the 195-mile drive from their home to the beach for a vacation. They decide to share the driving equally among the 3 people who are old enough to drive (Mom, Dad, and Grandma). If they each drive one-third of the way and they each maintain a speed of 65 mph throughout the trip, how long will each of them be driving? If they make a 15-minute stop each time they switch drivers, how long will the entire trip last?

### WEEK 2

**Although running** at the beach is harder than running at home, Andy likes to run along the shoreline. He usually runs for 30 minutes on a level surface at home and always burns 50 calories for every 10 min. that he runs. At the beach, the same distance takes Andy 40 min., and he burns a total of 240 cal. If Andy maintains a constant speed throughout his beach run, how many calories will he burn every 10 min.? Write a ratio to describe 10 min. of running at home and another ratio to describe 10 min. of running at the beach. How are they different? Discuss with your group why the beach run is harder for Andy than running at home.

### WEEK 3

**During low tide**, 6:00 a.m.–12:00 p.m., a wave rolls into the shoreline every 6 seconds. During high tide, 12:00 p.m.–6:00 a.m., a wave rolls in every 3 sec. Transitioning from low tide to high tide (11:30 a.m.–12:00 p.m.) takes a half-hour. During this transition period, waves increase at a rate of 1 sec. per 10 minutes. (So, between 11:30 and 11:40, a wave rolls into the shoreline every 4 sec.; between 11:40 and 11:50, every 5 sec.; and so on.) On the basis of this information, determine how many waves would roll into the shoreline from 6:00 a.m. to 6:00 p.m. If this pattern remained the same, how many waves would roll into the shoreline throughout an entire week? 60 days? A year?

### WEEK 4

**Andy's family decides** to enter the annual sand castle competition at the beach. The base of their castle is rectangular, with one side measuring 36 inches and the perimeter of the base measuring 120 in. They want to build a moat around the entire base of the castle, with each side of the moat measuring 3 in. away from the parallel side of the castle. With this information, determine the perimeter of the moat.

Sandra M. Linder, PhD, [sandram@clemson.edu](mailto:sandram@clemson.edu), is an assistant professor of early childhood mathematics education at Clemson University in Clemson, South Carolina. Email problem collections for the editor to consider for future Math by the Month columns. See submission guidelines at [www.nctm.org/tcmdepartments](http://www.nctm.org/tcmdepartments). Email creative solutions and adapted problems to [tcm@nctm.org](mailto:tcm@nctm.org) for potential publication, noting Readers Exchange in the subject line.

WEEK 1

**The Simpson family reunion** will be at the beach this year. Every family will bring food to share. Amber plans to take sub sandwiches and will cut each into 4 equal pieces. If 48 people attend the reunion, how many subs must Amber take so that everyone gets a piece? Amber also wants to make sure that each person has a brownie for dessert. She cuts trays of brownies into 6 equal pieces. How many trays must she take so each person gets a brownie? How many would she take if each person were to have 2 brownies? Explain to a partner how you solved the problem. How do your strategies for solving differ? How are they similar?

WEEK 2

**As they were setting** out food at their family reunion, Amber realized that no one had brought anything to drink! She had only \$30 to spend on drinks for all 48 people. She went to the snack stand on the beach and found the price list to the right. Using this list, find the combinations of drinks that Amber could buy so that everyone at the reunion has 1 beverage to drink. With each combination, will Amber have any money left? If so, how much? Share your combinations with your friends. Did you miss any combinations?

Drink	Cost
Bottled water	\$0.75
Juice box	\$0.50
Soda	\$1.10
Energy drink	\$1.75

WEEK 3

**Using sunblock** while you are at the beach is important. Amber brought a half-full bottle of sunblock to the beach. When she applies it, she uses one-fourth cup to make sure she is completely protected. If the whole bottle can hold 3 cups of sunblock, how many times can Amber apply sunblock throughout the day before she runs out? Use pictures, numbers, and a written description to show your strategy for solving this problem.

WEEK 4

**Amber wants to** lie on her blanket to nap on the beach, but she wants to make sure she stays completely off the sand. Her blanket is in the shape of a square, with one side measuring 60 inches. Amber is 5 feet, 6 inches tall. Is the blanket long enough for Amber to lie vertically on it without being in the sand? Is the blanket long enough for Amber if she lies diagonally? Use grid paper or a ruler to help find your answer.

WEEK 1

**Bella, AJ, and Clara** left their home at 8:45 a.m. and arrived at the beach with their parents at 9:00 a.m. They must go home at 3:30 p.m. It took the family a half-hour to set up their chairs and umbrellas when they arrived. Then they went swimming for an hour and built a sandcastle for a half-hour. After they finished their castle, they had lunch for an hour while relaxing under their beach umbrella. After lunch, they walked for an hour on the beach, looking for seashells. What time did they return from their walk? How much time do they have left to swim and play before they have to go home? Draw a picture to show how you solved this problem.

WEEK 2

**Clara was collecting shells** on the beach with her brother and sister. She had 6 shells in her bag. When she found more shells and added them to her collection, she then had 9 shells in her bag. How many shells did she add to her shell collection? Her brother had 13 shells in his bag. How many more shells did AJ have than Clara? Draw a picture to show your strategy for solving.

WEEK 3

**Bella dumped her shell** collection on the sand to show her sister, Clara, who noticed the different characteristics of each shell: “Look! This one is pointy, and this one is rough! This one is bright white with pink in the middle!” There are many ways to classify shells. Look at the shells in the picture. How could you sort or group them into categories on the basis of one of their characteristics? Share your sort with some friends. How are their sorts different from yours?



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WEEK 4

**Sitting together in a tidal pool**, Bella, AJ, and Clara were watching the fish swimming around them. They saw a school of fish swimming in rows with 3 fish in each row. They counted 5 rows of fish. How many fish did they see altogether?