

Math 6 Materials

Table of Contents

Problem of the Month “Fractured Numbers”

Level A (Day 1)	Page 1
Level B (Day 1)	Page 2
Level C (Day 2)	Page 3
Rooster and His Friends (Day 3)	Page 5
Unknowns (Day 4)	Page 6
Cecilio’s Tiles (Day 5)	Page 8
Sewing (Day 6)	Page 10
Truffles (Day 7)	Page 11
Boxes (Day 8)	Page 13
A Board Game (Day 9)	Page 15
Skateboard Tricks (Day 10)	Page 16

2/3

Problem of the Month

3/4

Fractured Numbers

Level A

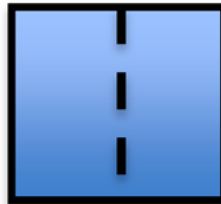
Rosita has made a puzzle. She takes a whole rectangle like the one below.



She cuts the whole into half.



She takes that half and cuts it in half.



Finally she takes the small piece she cut and cuts that in half.

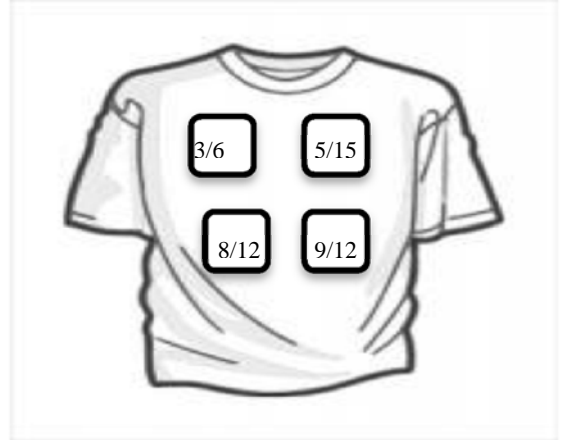
Now she has the piece she wants. How many of these small pieces can she put together to make the same size rectangle that she started with? Explain how you know.

If she had cut her small piece in half again, how many of those pieces would be needed to make the first rectangle?

What if she kept going? How would the pieces get smaller?

Level B

Jeff is playing a new video game. The goal is to explore a cave with many levels and collect gold coins. In order to get through a door to the next level, you must master a secret code. Jeff's video character has four pockets on his jacket. The top left pocket is marked $\frac{3}{6}$, the top right pocket is marked $\frac{5}{15}$, the lower left pocket is marked $\frac{8}{12}$ and the lower right pocket is marked $\frac{9}{12}$.



Above the cave door at each level is a number card. To open the door, he must take the number card from the door and put it in the correct pocket. If he puts it in the wrong pocket, he loses one of his 3 lives. Here are the cave doors he must travel through.

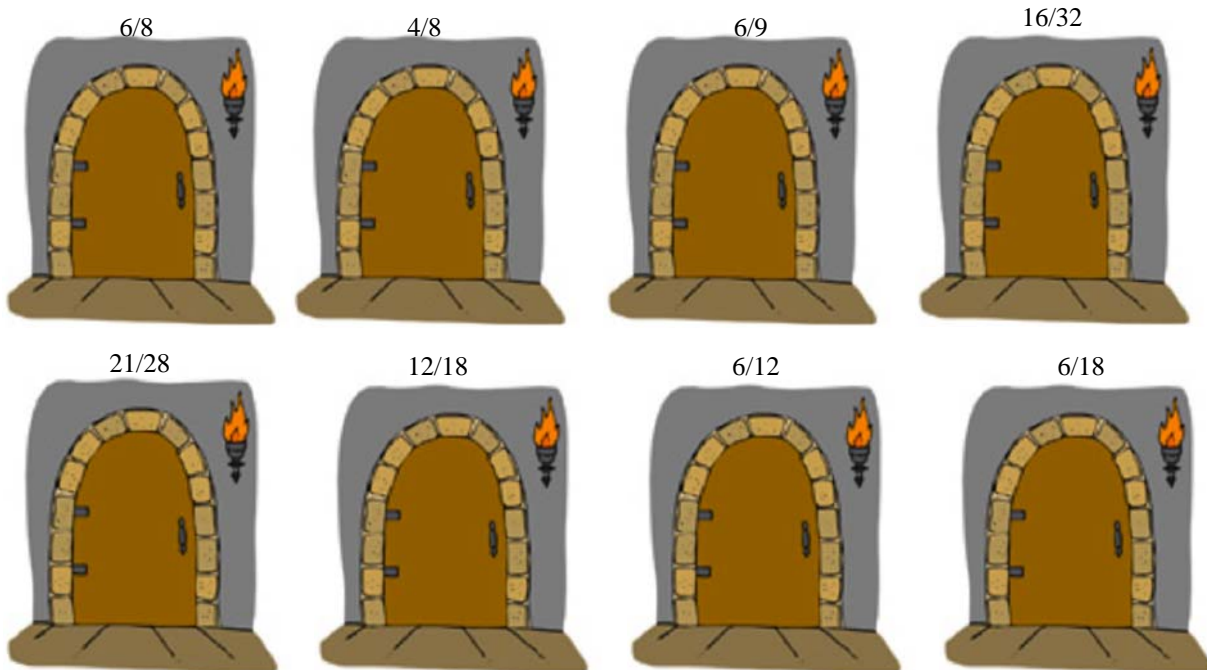


Figure out the secret code to get through all the doors. Write Jeff a note letting him know which numbers go into which pocket. Explain to Jeff how you know for sure. Remember, if you get it wrong he loses a life!

Level C

Roxie is a show dog. Her trainer wants her to have a beautiful and brilliant coat. The veterinarian suggested a special diet for the trainer to follow. Each feeding, Roxie eats $\frac{2}{3}$ of a can of wet dog food, $\frac{1}{8}$ of a bag of dry dog food, and $\frac{3}{5}$ a patty of special meat. The special meat comes in a package of 6 patties. Roxie has two meals a day.



The dog is completely out of food. The trainer goes to the store and buys 24 cans of wet food, 4 bags of dry food and 3 packages of meat.

How many days will the dog be fed before the trainer needs to buy any more food?

Which type of dog food will the trainer run out of first? Explain.

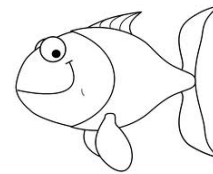
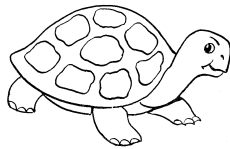
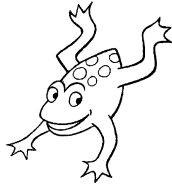
How much of the other two types of dog food will be left after the first type of dog food runs out?

The trainer wants to plan better. She goes to the store on the day she ran out of the first type of dog food. She decides to buy enough dog food to last 90 days. Knowing what she already has in the house, how much more of each type of dog food does she need to buy in order to use up all the food in 90 days? Is it possible? Explain.

What is the minimum amount of food the trainer could buy such that the dog would finish all of it after a certain number of meals? Explain.

Rooster and His Friends, A Play

MAC Assessment Task



Margo is helping her mom sew costumes for the Kindergarten play, *Rooster and His Friends*.

Each costume takes a different amount of fabric.

Character	Fabric needed
Rooster	$\frac{1}{2}$ yard
Cat	$\frac{1}{3}$ yard
Frog	$\frac{3}{4}$ yard
Turtle	$\frac{2}{3}$ yard
Fish	$\frac{1}{4}$ yard

1. Which costume takes the least fabric? _____
2. Which costume takes the most fabric?
Show how you know your answer is correct. _____
3. Margo says, "We have to buy more fabric to make the 3 Frog costumes than we do for the 4 Turtle costumes!" Explain or show why Margo is incorrect.

Unknowns

MAC Assessment Task

Read each of these math story problems. Your job is to write an equation that means the same thing as the story. Use a letter or a box (as shown below) for the unknown amount in each story. Then solve for the unknown.

Here is an example:

14 clowns carried the same number of balloons. There are 154 balloons in all.
How many balloons did each clown carry?

$$14 \times \square = 154$$

$$14 \times 10 = 140, 14 \times 11 = 154$$

$$\square \text{ equals } 11$$

1. The Art Teacher found 3 boxes of brushes and 4 extra brushes. There were 40 brushes in all. How many brushes were in each box?

2. Robin sewed 21 shirts. She sewed 6 shirts for each of her children and 3 for herself. How many children does Robin have?

3. Ben baked 6 times as many cookies as Francis. Francis baked 42 cookies. How many cookies did Ben bake?

4. Aaron bought 4 student tickets to the football game. He split the cost of the tickets with a friend. Aaron paid \$30. What is the price per ticket?

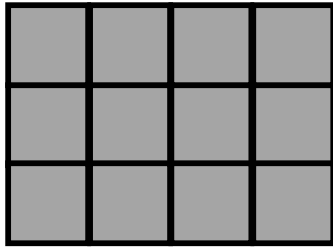
10

Cecilio's Tiles

MAC Assessment Task

Cecilio is making rectangles out of unit tiles.

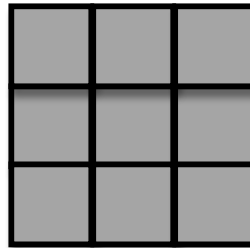
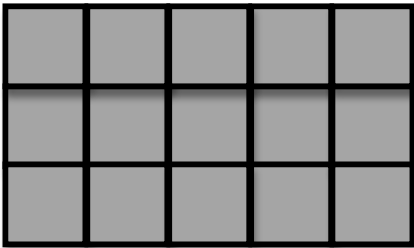
He made the figure below.



1. How many unit tiles are in Cecilio's figure? _____

2. Explain how you can find the total number of unit tiles without counting each one.

Sally drew two more rectangles.



3. Describe a method to find the total number of tiles used to make these two rectangles without counting each tile.

4. Sally used numbers and operations to show how she calculated the total number of tiles used in making the two rectangles. Circle all of the correct numbers and operations that Sally could have written to get the correct number of tiles.

A. $3 \times (5 + 3)$

B. $3 + 3 + 3 + 3 + 3$

C. $(5 + 5 + 5 + 5 + 5) + (3 + 3 + 3)$

D. $3 \times 5 + 3 \times 3$

E. $(5 \times 3) + (3 \times 5)$

F. $(5 + 3) \times (3 + 5)$

5. Draw two different rectangles using the same number of unit tiles that Sally used.

6. Write a number sentence to show the rows, columns and total number of tiles you needed to make your drawing of the two rectangles.

Sewing

This problem gives you the chance to:

- use mathematics in a real life situation
-

Amy is sewing some pants for herself.

This is the rule for how much fabric she needs to buy.

- Measure from your waist to the finished length of the pants
- Double this measurement
- Add 8 inches



1. Amy's measurement from her waist to the finished length of the pants is 35 inches.

How many inches of fabric does she need? _____

2. Fabric is actually sold not in inches, but in yards. Each yard is 36 inches.

The smallest amount you can buy is a quarter of a yard. So, if you want one yard and 25 inches you have to buy one and three quarter yards.

How much fabric must Amy buy for the pants? _____

3. Chris is also making some pants for herself.

She buys fabric, thread, buttons and a zipper.

Complete Chris's bill

	\$
$2\frac{1}{4}$ yards of fabric at \$5 a yard	
2 spools thread at 35¢ a spool	
3 buttons at 25¢ each	
Zipper 60¢	
Total before sales tax	
Sales tax at 8% (round this to nearest cent)	
Total	

10

Truffles

This problem gives you the chance to:

- do calculations in a real situation
-

Linda makes chocolate truffles.

The recipe for 20 dark chocolate truffles is

1 cup cream
2 cups dark chocolate



1. Complete the recipe for 40 dark truffles

_____ cups cream

_____ cups dark chocolate

2. One day, Linda has 8 cups of dark chocolate and plenty of cream.

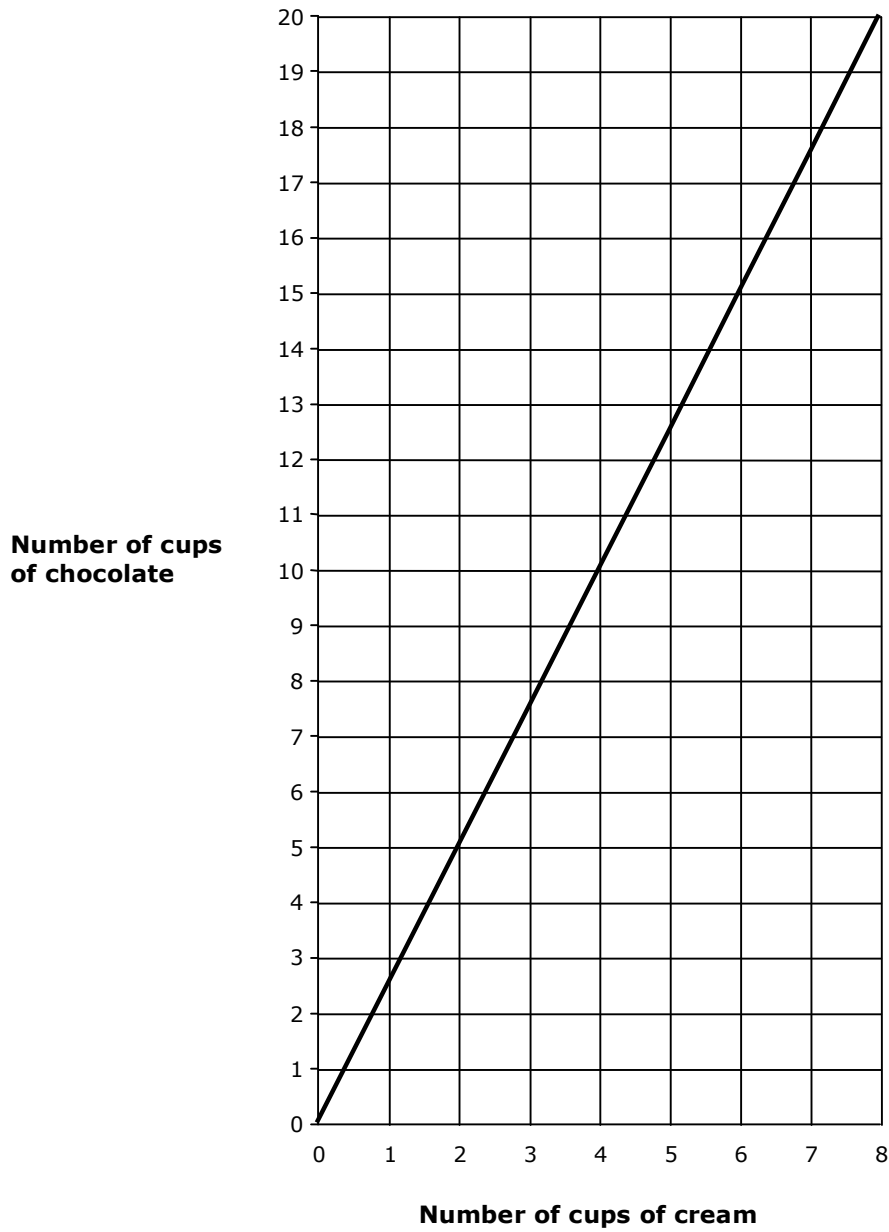
How many truffles can she make? _____
Explain how you figured it out.

3. The recipe for Super Truffles is different. The graph on the next page shows how much cream and chocolate to use.

How much chocolate does Linda need for two cups of cream?

4. How much cream does she need for 15 cups of chocolate?

Super Truffles



5. Write a rule that Linda can use to figure out how many cups of chocolate she needs for any number of cups of cream when making Super Truffles.

Boxes

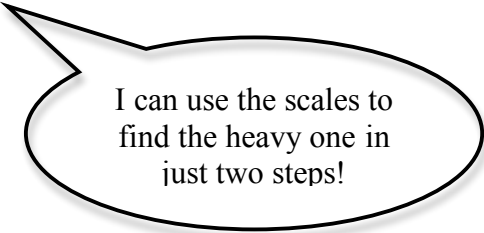
This problem gives you the chance to:

- show understanding of a mathematical situation
 - explain your reasoning
-

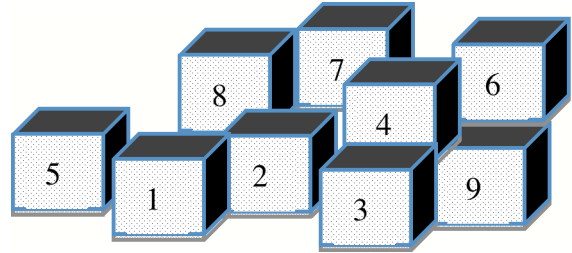
There are nine small boxes.

They all look exactly the same but one is a bit heavier than the others.

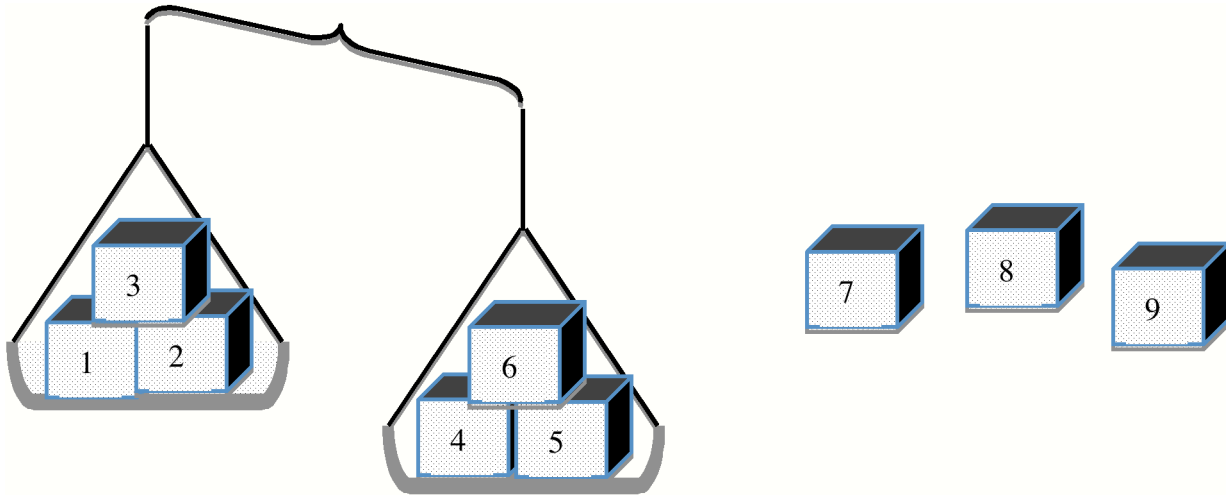
Jake says,



I can use the scales to find the heavy one in just two steps!

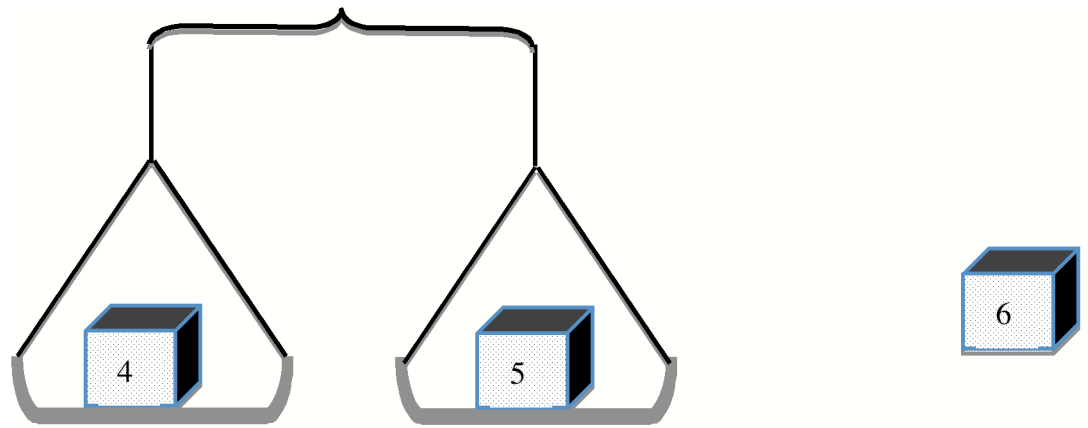


This is what Jake does first.



1. Explain what Jake now knows about the heavy box.

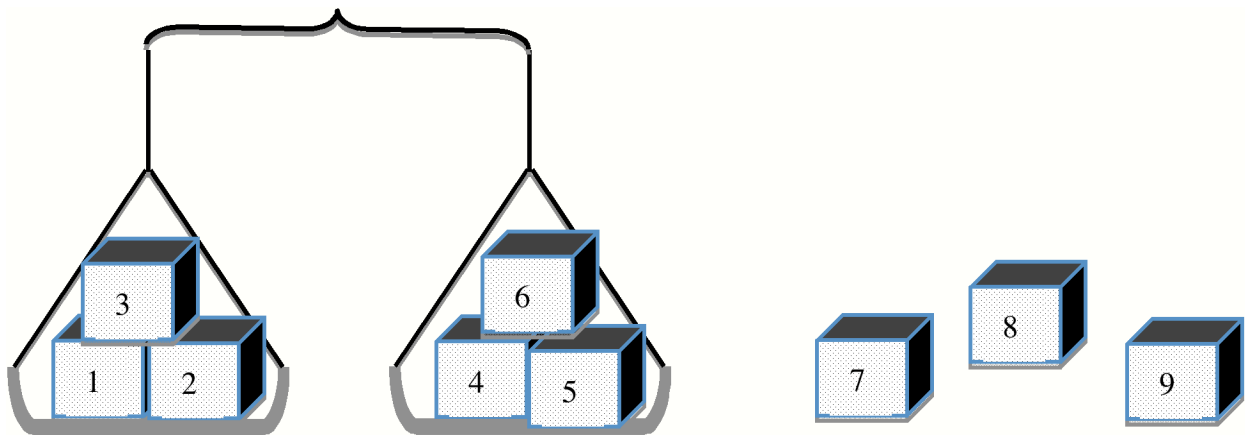
Then Jake does this.



2. Which is the heavy box? _____

3. Explain how you know.

4. Suppose the scales showed this the first time instead.



What should Jake do now to find the heavy box?

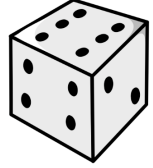
A Board Game

This problem gives you the chance to:

- work with probabilities
-

Jake and Annia are playing a board game using an ordinary cube numbered 1 to 6.

Players take turns to throw the cube, but only the player with the higher score moves. The player with the higher score moves the number of places shown on their cube. If the scores are equal neither player moves.



1. On his first throw Jake got a 3. Annia was the one to move.

What numbers could she have thrown?

List all the possible numbers.

2. On his second throw Jake got a 4.

What is the probability that Annia was the one to move?

3. On another throw, after Jake has thrown, the probability that Annia moves is $\frac{2}{3}$.

What number did Jake throw?

4. Towards the end of the game Annia needs to move two places to win. She must throw exactly 2.

What would Jake need to throw for Annia to have a chance of winning?

Explain how you decided.

5. Annia thinks it unfair for Jake to go first each time. She thinks it gives him an advantage.

Is she correct? _____

Explain how you decided.

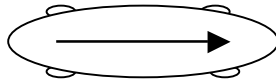
Skateboarding Tricks

This problem gives you the chance to:

- use geometry in everyday life

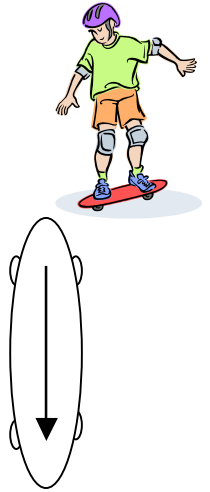
Tom loves skateboarding. He can do lots of tricks.

1. When he begins his first trick, the skateboard is in this position.



He spins clockwise.

When he has completed the trick, the skateboard is in this position.



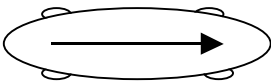
Through how many degrees has the skateboard turned? _____°

2. Tom can do a second trick. The skateboard does a complete turn.

Through how many degrees does his skateboard turn? _____°

3. In his third trick the skateboard makes a 180° turn.

Draw the end position of Tom's skateboard.



Start position

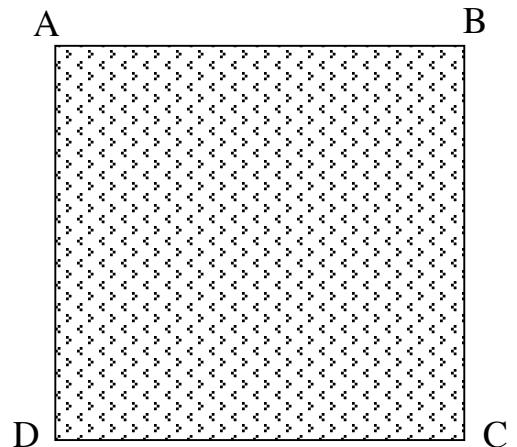
End position

4. Tom's fourth trick shows that he can skateboard around a square fish pond.

When he starts at point A, this is the position of his skateboard.



- He skateboards in a straight line until he reaches point B.
- He spins clockwise until he faces point C.
- He skateboards in a straight line until he reaches point C.
- He spins clockwise until he faces point D.
- He skateboards in a straight line until he reaches point D.
- He spins clockwise until he faces point A.
- He skateboards in a straight line until he reaches point A.



Through how many degrees has his skateboard turned in all? _____

5. Tom's newest trick uses a ramp. The ramp looks like this.

What are the other two angles of Tom's ramp?

Explain how you figured this out.

