

Core Focus

- Patterns: Exploring multiplication and addition patterns, investigating square numbers, and analyzing number and shape patterns
- Time: Converting between units, calculating elapsed time and introducing seconds
- Money: Making transactions and calculating change

Patterns

- Exploring and describing number patterns using pictures, tables, number sentences, and word rules helps prepare for the study of algebra.

Ideas for Home

- Use toothpicks or pennies to create a pattern that increases from one picture to the next and ask what the next two pictures will look like. Ask your child to create a pattern for you to predict.
- Use bathroom or kitchen tiles to make patterns. Notice the numbers that grow with the pattern and predict how many tiles will make up a later step, like seven or ten.

12.2 Patterns: Investigating square numbers

Step In Look at this growing pattern. How many squares are in the first picture? How many squares have been added to make the second picture?

Picture 1

□

Picture 2

□ + □

Picture 3

□ + □ + □

How many squares have been added to make the third picture?
 What do you think the fourth and fifth pictures will look like?
 Amy makes this table to help look for a pattern rule.

Picture Number	1	2	3	4	5	8	10
Number of Squares	1	4	9				

In this lesson, students write an equation to describe the relationship between the position of the number in the sequence and its value.

12.4 Patterns: Analyzing shape patterns

Step In Joel is decorating the school gymnasium. He makes this repeating pattern.

What color flag should he hang next?
 How can you tell?
 How could you figure out the color of the 20th flag?

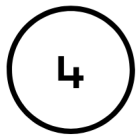
Joel creates this table.

Red	White	Blue
1st	2nd	3rd
4th	5th	6th
7th	8th	9th

How could it help him figure out the color of the 20th flag?
 What is the color of the 90th flag?
 How do you know?

The position of each blue flag is a multiple of 3. 90 is a multiple of 3, so the 90th flag will be blue.

In this lesson, students analyze shape patterns to figure out the 20th or 90th flag color.



Time

- In earlier grades, students began reading and writing times to the nearest minute before and past the hour, and solving elapsed time problems on analog and digital clocks. Now students extend those skills to converting between minutes and hours, and between seconds and minutes.

12.6 Time: Converting between units

Step In This table shows the length of time that activities took in one school day.

Activity	Time
Math	1 hour
Reading	55 minutes
Writing	30 minutes
Library	30 minutes
Science	30 minutes
Art	25 minutes
Sport	45 minutes
Music	25 minutes
Social Studies	30 minutes

What is the total length of time for math and science? How could you calculate the total in minutes?

1 hour + 30 minutes is equivalent to minutes

What are some other times in the table that total more than one hour?

In this lesson, students practice elapsed time, and convert between minutes and hours.

- Students also calculate elapsed time in hours, minutes, and seconds.

Money

- Students *count on* from an amount represented with coins to equal a given price. This strategy helps with giving change.

12.9 Money: Making transactions

Step In What fraction of one dollar is one cent?

How would you write that as a decimal fraction?
 What fraction of one dollar is twenty-five cents?
 How would you write that as a decimal fraction?
 What does a price like \$3.16 mean?

Claire has this bill and coin in her purse, and she wants to buy the drink.

How much more money does she need?
 Claire counted on in her head like this.

+ + + = \$1.85

What is another way you could count on to \$1.85?

In this lesson, students use the count-on strategy to calculate the amount of extra money needed.

Ideas for Home

- Talk about time as often as possible. For example, “It’s 7:55. We have to leave for school at 8:30 — can you figure out how many minutes until then?” or “The bus will come at 2:30. My watch says 2:24, so how many more minutes until the bus arrives?” Constant practice is important for helping your child learn to read, write, and make sense of time.
- Ask your child to show you different amounts of money using coins: “show me 35 cents.” To challenge your child, ask them to show you the same amount by using different combinations of coins or by using the fewest coins possible.
- Playing *store* is a fun way to practice addition and subtraction with money. Label items in your house with amounts less than \$1, and give your child several coins to pay for the items. Help your child count out enough coins to pay for items and calculate the change, if needed.