

# Mathematics Essentials 11

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Mental Math

- B1 know the multiplication and division facts
- B2 extend multiplication and division facts to products of tens, hundreds, and thousands by single-digit factors
- B3 estimate sums and differences
- B4 estimate products and quotients
- B5 mentally calculate 25%,  $33\frac{1}{3}\%$ ,  $66\frac{1}{3}\%$  and of quantities compatible with these percents
- B6 estimate percents of quantities

### Data Management

- F1 read and interpret various data displays
- F2 analyze graphs to describe patterns within the context of the data and predict future trends
- F3 select an appropriate display for a given set of data and explain the reasons for the choice
- F4 represent given data in a variety of displays, using spreadsheets or other technology
- F5 collect, display, and analyze data to draw appropriate conclusions about relevant questions or issues

### Banking

- A1 understand the various savings and investing alternatives commonly available
- A2 explore the concepts of risk tolerance vs. reward investing and demonstrate an understanding of how it changes during different life stages
- B7 calculate the cost of a loan using amortization tables
- B8 determine the cost of using credit, using technology

- C1 interpret data from amortization tables
- C2 explore the effects of parameter changes on the cost of borrowing money
- C3 determine the effects of compound interest on deposits made into savings accounts using technology
- C4 explore the growth of savings based on a variety of investment strategies ranging in amounts and time frames using technology

## Housing

- A3 understand the rights and responsibilities of landlords and tenants

## Measurement and Design

- D1 demonstrate an understanding of the concept of perimeter and area
  - D2 calculate perimeter and area
  - D3 estimate perimeter and area using estimation strategies
  - D4 use perimeter and area to solve a variety of real world problems
  - D5 demonstrate an understanding of volume and surface area
  - D6 calculate surface area and volume of rectangular prisms and cylinders
  - D7 use surface area and volume to solve real world problems
  - D8 estimate the volume and surface area using estimation strategies
  - D9 calculate scale factors in 2-D scale diagrams and 3-D scale models; understand the relationship among the scale factor and the related change in area or volume
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- E1 understand the meaning and use of square root numbers when determining the dimensions (sides) of a square
  - E2 understand and apply the Pythagorean Theorem
  - E3 find the missing side measure in a right angle triangle
  - E4 create 2-D scale diagrams and 3-D scale models

## Taking a Trip

- A4 understand how to read a map
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- B10 determine the expenses related to taking a trip (i.e., gasoline, accommodations, meals, etc.)
  - B11 determine the distances using scales on a map
  - B9 determine the cost associated with renting an apartment or buying a house