

Unit 2: Expenses

Content Area: **Mathematics**
Course(s): **Practical Math (as per IEP)**
Time Period: **1 marking period**
Length: **10 Weeks**
Status: **Published**

Unit Overview

- This unit will cover the various types of expenses, including but not limited to: basic purchases, sales tax, food and utilities.
- This unit will use perimeters and areas of polygons to solve real world problems involving measurements and costs of home improvement projects.

Transfer

Students will be able to independently use their learning to...

- Compute discount, sale price, sales tax, and total cost
- Compute and compare unit prices
- Use perimeters and areas of polygons to solve real world problems involving measurements and costs of home improvement projects.
- Compute decorating and remodeling costs.
- Compute markup and retail price.

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Understandings

Students will understand that...

- The focus is on basic math skills used in everyday life with the goal of developing intelligent consumers. The practical applications of math are studied using real world situations. This unit emphasizes making purchases, calculating living expenses and using perimeters and areas of polygons to solve real world problems involving home improvements.

Essential Questions

Students will keep considering...

- What does the word percent mean?
- How do you find the percent of increase (markup) or decrease (discount) of a quantity?
- How do you choose what the variable in a word problem should represent?
- What is pi and how is it used in determining the area or circumference of a circle?
- What is the connection between the number pi and the dimensions of a circle?
- How do we use formulas to determine perimeter and area of polygons?
- What is the difference between linear and square units of measurement?

Application of Knowledge and Skill

Students will know...

Students will know...

- What pi represents.
- How important precision is in measurement.
- Choosing appropriate units is important to accuracy.
- Understand the parts of a formula or equation.
- Understand how mathematical tools, such as tables, can help model real world problems.
- Understand the different limitations necessary to solve problems related to home improvements.
- The application of percents are a critical life skill and are used in daily life.

Students will be skilled at...

Students will be skilled at

- Finding perimeters of polygons
- Finding circumference of circles
- Finding areas of polygons and circles
- Understanding problems involving perimeter and area
- Applying formulas to find perimeters and areas of polygons.
- Understanding pi
- Applying pi to solve problems involving circumference and area
- making sense of problems using perimeters and areas

- Checking for reasonableness of answers in the context of the problems.

Academic Vocabulary

quantities	precision	measurement	unit	formula	table	model	accuracy
limitations	solve	simplify	compare	markup	wholesale	retail	discount
discount rate	sales tax	perimeter	area	square	rectangle	triangle	polygon
circle	real world	formula	base	height	equation	variable	circumference
pi	exponent	linear	square units				

Target 2.1b

SWBAT:

Determine appropriate units for a given formula

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.4	Model with mathematics.
MA.N-Q.A	Reason quantitatively and use units to solve problems.
MA.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
MA.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
MA.K-12.6	Attend to precision.
MA.N-Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Target 2.1c

SWBAT

Organize quantities, such as expenses, into a graph and use it to identify solutions to real world problems

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.4	Model with mathematics.
MA.N-Q.A	Reason quantitatively and use units to solve problems.
MA.K-12.5	Use appropriate tools strategically.
MA.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

MA.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
MA.K-12.6	Attend to precision.
MA.N-Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
MA.K-12.7	Look for and make use of structure.

Target 2.2a

SWBAT

Identify parts of an expression

MA.A-SSE.A.1	Interpret expressions that represent a quantity in terms of its context.
MA.A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.
MA.K-12.7	Look for and make use of structure.

Target 2.2c

SWBAT

Use equations to model real world problems and interpret their solutions

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.A-REI.B	Solve equations and inequalities in one variable

Learning Goal 2.3

Apply and make sense of perimeter and area formulas to solve real world problems

Target 2.3a

SWBAT:

Find the perimeter of a polygon

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.

MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.G-GPE.B.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

Target 2.3b

SWBAT:

Find areas of rectangles, parallelograms, triangles, and trapezoids

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.G-GPE.B.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

Learning Goal 2.4

Apply the concept of pi to solve real world problems involving circumference and area of a circle.

Target 2.4a

SWBAT:

Find the circumference of a circle.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.G-CO.A.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.

Target 2.4b

SWBAT:

Find the area of a circle

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.G-CO.A.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.

Summative Assessment

Tests, quizzes, End of Unit Assessment, Projects

21st Century Life and Careers

WORK.9-12.9.1.12.1	The ability to recognize a problem and apply critical thinking and problem-solving skills to solve the problem is a lifelong skill that develops over time.
WORK.9-12.9.1.12.F.2	Demonstrate a positive work ethic in various settings, including the classroom and during structured learning experiences.
WORK.9-12.9.2.12.3	Income affects spending decisions and lifestyle.
WORK.9-12.9.2.12.4	Taxes and the cost of employee benefits can affect the amount of disposable income.
WORK.9-12.9.2.12.A.1	Analyze the relationship between various careers and personal earning goals.
WORK.9-12.9.2.12.A.9	Demonstrate how exemptions and deductions can reduce taxable income.
WORK.9-12.9.3.12.C.6	Develop job readiness skills by participating in structured learning experiences and employment seeking opportunities.

Formative Assessment and Performance Opportunities

- Class participation
- class/homework
- class closure
- class openers
- group work
- presentations
- projects
- student teacher discussions

Differentiation/Enrichment

- 504 Accommodations
- IEPs
- challenge problems
- heterogeneous grouping
- DoNow activities
- projects
- individualized instruction
- technology

Unit Resources

- Supplementary Textbooks
- Kuta Software
- Examview Software
- BizKid\$ DVD Series - Lesson Plans - Vocabulary - Activities

Additional Websites:

- Dan Meyer's 3-Act Math Tasks:
<https://docs.google.com/spreadsheet/pub?key=0AjIqyKM9d7ZYdEhtR3BJMmdBWnM2YWxWYVM1UWowTEE&output=html>
- NCTM Illuminations Website: Resources for Teaching Math:
<http://illuminations.nctm.org/Default.aspx>
- PARCC Educator Resources: <http://www.parcconline.org/for-educators>
- The Geometer's Sketchpad Resource Center: <http://www.dynamicgeometry.com/>
- Khan Academy: <https://www.khanacademy.org/>
- BizKid\$: <http://www.bizkids.org>
- www.businessdictionary.com
- www.mymoney.gov
- www.jumpstart.org
- www.treasury.gov