Workspace Design

Time Estimate
45-50 minutes  Scale Floor Plans: Preparation and Drawing
15-30 minutes  Classroom Design Challenge
20 minutes  Home-Work Spaces

Overview

In this 3-part mathematics-based design activity, students first draw a scale floor plan of the classroom and make scale figures out of pipe cleaners. They then discuss how they might redesign the classroom to work better for them. Students conclude by brainstorming practical ways to improve their work spaces at home.

Mathematics Standards

Students should:

Units of Measurement
- Understand the concept of a square unit.
- Understand the use of square units in measuring area.
- Understand and applies basic and advanced properties of the concepts of measurement
- Understand the basic measures perimeter, area, volume, capacity, mass, angle, and circumference.
- Select and use appropriate tools for given measurement situations (e.g., rulers for length, measuring cups for capacity, protractors for angle).
- Understand relationships between measures (e.g., between length, perimeter, and area)
- Understand that measurement is not exact (i.e., measurements may give slightly different numbers when measured multiple times).
- Use specific strategies to estimate quantities and measurements (e.g., estimating the whole by estimating the parts).

Shapes and Figures
- Understand the concept of two-dimensionality.
- Understand the concept of three-dimensionality.
- Analyze characteristics and properties of two- and three-dimensional shapes.

Ratio/Proportion/Percent
- Use proportionality to model problems.
- Use proportionality to solve problem.

Uses of Mathematics
- Apply mathematical thinking and modeling to solve problems that arise in other disciplines.
- Understand, represent, and use numbers in a variety of forms in real-world and mathematical problem situations.
- Connect mathematical ideas within a real world context.

Science & Technology Standards

Students should:

Design Process/Architectural Design
- Use design process to solve, justify and communicate solutions to problems.
- Identify a problem or design opportunity.
- Propose designs and choose among solutions.
- Implement a solution that conforms to the design constraints.
- Visualize and represent geometric figures with special attention to developing spatial sense.

Sources: NCTM (National Council of Teachers of Mathematics) Mathematics Standards; Mid-Continent Research for Education and Learning (MCREL): National Technology Standards by International Technology Education Association (ITEA).
Materials & Preparation

- This activity contains many distinct steps. Read through beforehand and decide how many of these you want to include, given time constraints and students’ prior knowledge.

- Measuring tapes: Supply as many as you can muster so that student pairs can measure the classroom. Alternately, supply ordinary rulers.

- To draw a floor plan, each student needs several sheets of 1/4” graph paper (8.5”x11” or 11”x17”), scrap paper, and a pencil and eraser.

- Photocopy the “Scale Figures” handout, one per student.

- Photocopy the “Scale Rulers” handout and cut out one 1/4”=1’ ruler per student (the second ruler from the left).

  Option: If your younger students will have an easier time drawing in larger scale, cut out 1/2”=1’ or 1”=1’ rulers instead. In this case, students may need to tape together two pieces of graph paper to fit their drawings on one page.

- 16” pipe cleaners, one per student.

- Cut 3”x5” index cards in half, one (half) card per student.

See the concluding sample “Letter to Parents/Guardians”. Send copies home to extend the activity outside of the classroom. Feel free to revise or to incorporate into an e-mail, newsletter, voicemail, or other correspondence with parents and guardians.

Procedure

Spaces and Shapes We Live In

Analysis & Discussion

Time Estimate: 5-10 minutes

Sample Introduction:

Everyone lives and works in shapes and spaces. Each time we walk into a building—a house, a school, a store, a movie theatre, a sports arena—we walk inside a geometric shape! Even outside, where there is no roof over our heads, we often move and play within rectangular fields, circular playgrounds, parallel sidewalks and roads, natural “walls” made of a row of trees, and so forth. Different architectural shapes help us accomplish different things in our lives. Let’s take a look at some of these shapes and spaces and talk about how they help us do our work.

- Ask students to brainstorm all the two-dimensional shapes they can think of. Compile a list and ask students to draw representative drawings on the board. E.g., circles, ovals, squares, rectangles, triangles (equilateral, isosceles, scalene), parallelograms, trapezoids, pentagons, hexagons, etc.

Discussion questions:

1. What are the most common shapes you find in workplaces? (Rectangles.)
2. Why do you think so many rooms are rectangular? (Building materials tend to be straight.)
3. What shape(s) is this classroom?
4. Do you think this classroom would work better for us if it was shaped differently? How come?

Segue into measurement activity:

Let’s redesign our classroom exactly how we want. To begin, we need to find out the precise size and shape of the space we’re starting with.
Measurement, Scale, & Pipe-Cleaner People

Time Estimate: 25 minutes

• Students work in pairs. Give each pair a measuring tape or standard ruler and ask them to measure and write down the dimensions (perimeter) of the classroom in feet and inches.

Measuring the classroom may pose enough of a challenge for younger students. In this case, skip to the “Design Challenge” and ask students simply to discuss ways they might improve classroom design to work better for them.

Introduce the idea of “scale”:

Every single workspace in this country, including this classroom, began as... a drawing! Before any building gets built—before any wood, steel, concrete, brick, glass, or nails enter the picture—architects draw designs in a detailed, specific way so that builders know exactly how to translate that small drawing into walls, windows, floors, and corners that fit together “to specification”—exactly according to plan.

Let’s work backwards from our classroom (that’s already been built) to a drawing. You’ve all measured and determined the dimensions of this room. How can you translate those big dimensions onto a small piece of graph paper—keeping everything in proportion?... Scale drawing is what makes this possible.

• Write the word “scale” on the board and ask if anyone can define or guess the meaning of the term. If needed, offer the following explanations:

Who’s ever looked at a map of our town? Is a map the same size as the town? Of course not. Everything is “scaled down.” All of the streets are shrunk down to fit on the map — but remain in the same relationship to one another. If one street is two miles long and the one next to it is one mile long, the two streets will stay in the same proportion (2:1) on the scaled-down map.

Another example: Say you have a photo of one of your favorite relatives that you want to blow up to a larger size to put on your wall. When the photo is enlarged—by an actual photo store or by using a “photoshop” program online—does just the nose get bigger, but not the eyes?... Of course not. As we all have seen, the photo is shrunk “in scale.” Everything in the photo is reduced the same amount, and stays in the same proportion.

• Write the following scale on the board and discuss what it means:  1/4” : 1’  Ask a student to draw a corresponding one-foot line and 1/4 inch line. Repeat for 1/2” : 1’ and 1” : 1’. How does changing the scale affect the size of a scale drawing?

• Do a quick series of “Scale Warm-ups.” Hand out 7” graph paper, pencils, erasers, and scale rulers. Pose three scale-related challenges to the class. Student pairs work out together and give a “thumbs up” when they think they’ve got an answer. Look around the room and make sure most kids understand the concept before moving on to drawings.

1. In 1/4”: 1’ scale, how many feet are represented by 3/4” (3 ft.)
2. In 1/2”: 1’ scale, how many inches = 3 ft? (1.5”)
3. In 1”: 1’ scale, how many feet are represented by 5 inches? (5 ft.)
Challenge student pairs to make 2 quick drawings to further reinforce the concept of scale:

1. On graph paper, draw a student desk in 1": 1’ scale and in “plan view” (top view only, as though you are looking down on the desk). Hint: use your rulers!
2. How tall are the two of you? Round this off to the nearest foot and then draw lines representing your heights in 1: 1’ scale; 1/2": 1’ scale; and 1/4": 1’ scale.

- Make 1/4": 1’ scale “pipe-cleaner people” to help students see and work more clearly in scale. Give each student a “Scale Figures” handout, one pipe cleaner, and a small index card. Read through the directions, step by step, and demonstrate how to make miniature figures out of pipe cleaners. (Skip steps 6-8.)

**Scale Floor Plans**

*Time Estimate:* 15 minutes

- Ask student pairs to draw a floor plan of the classroom: “How would you start drawing a floor plan—a two-dimensional, bird’s-eye view—of our classroom in scale where 1/4” equals one foot (1/4":1’)? Option: Have students set a 1” math tiles on their floor plans to get a sense of how large 4’ x 4’ of space is on the plan.
- Ask students to draw “Xs” to show their location in the room.
- Ask if anyone can figure out the “area” of the floor plan: “What’s the difference between ‘perimeter’ and ‘area’?” If needed, explain that the area of a shape can be found by simply counting the square feet within it. If students bring up the formula \( A = l \times w \), you can discuss this as another way of finding the area of a rectangle.
  Option: ask younger students to shade the area with one color and to draw a line around the perimeter with a second color.
- Challenge students to figure out “square footage per student”:
  “If we decided to divide the classroom space equally among all of us so that everyone got their own square of space, how much space would each person get?”
  Offer 2 guidelines:
  1. Figure this out using the classroom area we just determined.
  2. Your answer needs to be in square feet.

**Classroom Design Challenge**

*Time Estimate:* 15-30 minutes

- Students assess the workability of the classroom workspace. Document answers for each question on the board.

1. Before architects design/re-design a space, they ask themselves a series of design questions. First of all, they consider *Who.* Who uses this workspace, our classroom?
2. Architects also consider *What.* What are all the different kinds of work that need to get done in this workspace? Prompts, if needed: Class discussions? Painting? Quiet reading? Small group work? Poetry readings? Drama scenes?
3. On a scale of 1-10, with 1 being “poor” and 10 being “great”, how well does this workspace work for you, and why?
4. What are the *best* features of our workspace? Prompts, if needed: What about the blackboard? What about the wall space for posting things? How about the windows? What about the ceiling height?
**Pose a design challenge to student teams:**

You are all architects. You spend a lot of time thinking about space and best utilization of space. Imagine that we just received word that our town is going to build a new school—and you’ve been invited to design your ideal classroom. If you could redesign the shape/floor plan of our classroom to work better for us as a class, what would you change, if anything? Let’s generate a list of ideas.

- Collect answers on the board. Try to keep students focused on the shape and space of the room itself. For example, if students say they want more computers, where will they create space for these?

- **Prompts, if needed:** Would you like to increase the square footage per student (in other words, make the space bigger)? If so, how and why? Does the new room have to be rectangular? Would it be easier to concentrate if we had an alcove for quiet reading? How about an area with a sink so we can clean up more easily after art? How about a larger space for storing our stuff? What else?...

- **Time Check:** If time is running short, skip the following drawing step and proceed to the fun and useful “Home-Work Spaces” activity.

- On a clean piece of graph paper, student pairs draw new classroom floor plans. Encourage them, once again, to draw in scale. On a separate sheet of paper, students list and explain each new feature: What is each change and why did you make it? Give an example, our class needs new computers, so we created a 12’ x 12’ space for a new computer center.

- **Time Check.** If time allows, student teams present their new designs. Post floor plans and explanations on a designated wall or bulletin board. Invite the principal to visit the classroom, view student designs, and talk about ways (other than building reconstruction) that the classroom space might be improved.

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**Home-Work Spaces**

**A Fun Challenge and Discussion**

**Time Estimate:** 20 minutes

- Introduce the discussion: “Now let’s talk about your workspace at home—where you typically do your homework—and how well this space does or doesn’t work for you.”

- Ask students to stand up if the following statements are true for them. “Stand up if… “
  1. You do homework at a kitchen or dining room table.
  2. You work at your own desk or table.
  3. You do your homework lying or sitting on the floor.
  4. You share your workspace with someone else.
  5. You like working with other people around.
  6. You often get interrupted or distracted in ways that don’t help you work.
  7. You like it quiet when you work.
  8. It helps to listen to music while you work.
  9. It helps to have the TV or radio on while you work.
  10. You’re happy with your home workspace.
  11. There are things you’d change about your workspace if you could.
**Lead in to discussion:**

For most of us, it’s not an option to design and build a totally new workspace from scratch—a brand-new floor plan, walls, windows, and so forth. Instead, we work with the space we’ve inherited. While the floor plan may not be under your control, other key elements of the work **environment** are! Let’s talk about things in your workspace that you **can** change.

- Ask students to draw a line down the center of a lined piece of paper. Title the left side “+” and the right side “-”.

- Explain the directions: “I’m going to read a list of things that are part of your workspace at home. Listen carefully. As I read each item, decide whether this is a ‘+’ or a ‘-’ in your workspace—does it help your work or hinder your work?—and write it down under the ‘+’ or ‘-’ column.”

- Write each item on the board, prompt students with questions, and give them time to log items as a “+” or “-”.

  1. **Light.** Think about the lighting in your workspace. Is the light too dim? Too bright? Just right?
  2. **Noise level.** Some people like it noisy when they work; others like it quiet. Take a moment to think about the noise level in your workspace. Does this help or hinder you in your work?
  3. **Interruptions.** Do you often get interrupted while doing your homework? If so, does this have a positive or negative affect on your work?
  4. **Nourishment.** Our brains need nourishment—food and fluids—to stay alert and think well. Are healthy snacks available in your home? Do you remember to eat a healthy snack when you’re hungry or getting tired?
  5. **Getting Help.** Everyone I know, both kids and adults, gets stuck or has a question at some point while they work. At these moments, it’s useful to talk to someone who can help out. Is there someone at home, or a person you can call, to help you with homework when you need it?
  6. **Physical Comfort.** Is the space you work in comfortable? Is the chair comfortable? Is the desk or table the right height for you? If you work on the floor, is there a rug?
  7. **Organization.** Think about your workspace: is it well organized or messy? Either way, does this help or hinder you in your work?
  8. **Tools.** Everyone needs tools and equipment to do their work. For example, chefs need pans, stoves, and all kinds of different knives; students often need not only pencils and paper, but calculators, computers, art supplies, and more. Think of the tools you use to do your homework at home. How well do these work? Do you have everything you need?
  9. **Other.** What are other pluses or minuses in your particular work space that help—or don’t help—you in your work? Add these to your chart. For example, maybe you like to post inspiring quotes near your desk or computer. Maybe your dog is a big plus, as he keeps you company; or maybe he’s a minus because he keeps nudging you and drools all over your homework.

- Ask several volunteers to report on the major pluses and minuses in their workspaces. When a student brings up a minus, write this on the board and pose a question: “Can you think of ways to make this aspect of your workspace better for you?” Ask the class to help brainstorm possible design/environmental solutions. List suggestions on the board.

**Sample wrap-up:**

The spaces we work in can affect our work. Very few workspaces are perfect—whether at home, at school, or on a job. But there are almost always ways to make changes to a space to make it work better for you. Remember, each of us is different and works best under different conditions. Some of you like it noisy, others like it quiet. Some of you welcome interruptions, others don’t. Some of you like to work near a bright window, for others light doesn’t matter much. The key thing is to know your own working style and needs, and then to try to build on the pluses—and diminish the minuses—in your working environment.
To conclude, ask students to write down two action steps they can take to improve their work space at home. Go around the room and ask each student to read his or her action steps aloud. Set an “action due date” and ask students to report back on the results of their actions.

Optional Extensions

Model Building

*Time Estimate:* 1 class period

Using boxes and oaktag, students turn their 2-d classroom floor plans into 3-d models. Make photocopies of student floor plans and glue these on the bottom of boxes. Then, using scale pipe cleaner people and scale rulers as guides, students “build up” from the floor: interior walls, (paper) furniture, etc. Supply an array of building materials: construction paper, oak tag, craft materials, small recycled objects, and so on. To avoid the use of scissors or exacto knives, students can draw and paste on windows and doors. Consider enlisting the help of an art teacher for this project!

Interview an Architect

*Time Estimate:* 1 class period

Invite an architect or designer to visit the class or take a fieldtrip to an architecture office. Ask the architect to show students a floor plan and 3-d model, and to discuss the methods and materials used to design a space. Students interview the architect to find out how he or she chose and prepared for this career. (Select questions from the “On and Off the Job: Interview Sheet” found in the Social Studies section.)

Classroom Improvement Proposal

*Time Estimate:* 1 class period

Students brainstorm a list of improvements (aside from changing the floor plan) that would better the classroom “work environment” and make learning easier. They discuss and choose one improvement they think is most “doable” and write a proposal that can be presented to the principal, school business manager, PTO, school committee, a local foundation, etc. Student teams work on different sections of the proposal; e.g., Need for the Improvement, Educational Benefit, Budget Estimate, etc. Students can also consider ways to raise “improvement funds” as a class.

Design-Your-Own-Desk Contest

*Time Estimate:* 1 class period

There’s one thing millions of workers share in common, whether they work in a bank, a zoo, a school, the U.S. Congress, or a library: a desk! Ask each student to consider his or her school desk. How large is it? How comfortable? How functional? If students could design their own desks, would they be the same size and style? What would be different, and why? Working individually or in teams, students draw designs of new desks. Encourage them to use their scale rulers, draw in scale, and show their new desk from different vantage points. Students write 1-page “promotions,” selling potential customers on each new-and-improved feature.
Building Tour

*Time Estimate:* variable, depending on size of space

Take a tour of your building and have students guess the uses for various workspaces. How old is your building? Was it built to specification or did your company “inherit” the space? What workspace improvements are planned, and why? Have employees discuss different ways they modify workspaces to support them in their work and to “make them their own”.

Architectural Design

*Time Estimate:* 30-60 minutes

Show students floor plans and architectural designs for your workspace—or for any planned expansion projects. Is there a space on site that doesn’t work so well? If so, present this as a “case study” and ask student teams to brainstorm possible design/space solutions.

Select Resources


*Round Buildings, Square Buildings, and Buildings that Wiggle Like a Fish* by Philip Issacson (New York: Knopf, 1988). This book explores various architectural styles around the world, including churches, fortresses, bridges, mills, cliff dwellings, and light houses.

*Unbuilding* by David Macaulay. This factual account of the dismantling of the Empire State Building describes the structure of a skyscraper. Also check out *Castle, Cathedral, and Pyramid*. 
Dear Parents and Guardians,

In conjunction with Take Our Daughters And Sons To Work® Day, our class has been discussing ways to improve workspace design—both at school and at home. I encourage you to extend this lesson and continue this discussion at home.

*Here are some sample questions/topics for you to discuss with your child:*

1. What are the pros and cons of your workspace (at home or at work)?
   What would your ideal workspace look like?

2. Talk with your child about practical ways to improve his or her workspace at home.
   What improvements are needed in terms of light, noise level, organization, interruption, physical comfort, tools, etc.

Thank you for your interest and participation.

Best,
Money Matters

*Time Estimate:* 40-60 minutes

**Overview**
Through a “percentages” activity, students learn the basics of budgeting and money management. Students discuss basic money matters: why budgets are important, how to set spending priorities, the difference between “fixed” and “variable” costs, ways to get out of “the red,” the importance of saving, etc. Students also consider how well they’ve “managed” money (allowances, gifts, babysitting earnings, etc.) in their lives up until this point.

**Mathematics Standards**
Students should:

**Number and Operations**
- Compute fluently and make reasonable estimates.
- Develop understanding of fractions as part of unit wholes, as parts of a collection, as locations on number lines and as divisions of whole numbers.
- Use models, benchmarks, and equivalent forms to judge the size of fractions.
- Recognize and generate equivalent forms of commonly used fractions, decimals, and percents.
- Work with fractions, decimals, and percents to solve problems.
- Understand and use ratios and proportions to represent quantitative relationships.

**Communications**
- Organize and consolidate mathematical thinking through communications.
- Communicate mathematical thinking coherently and clearly to peers, teachers, and others.

**Uses of Mathematics**
- Understand that numbers and the operations performed on them can be used to describe things in the real world and predict what might occur.
- Understand that operations on numbers apply to real world situations.
- Understand that numbers apply to real world situations.

**Life Skills Standards**
Students should:

**Life Work**
- Prepare and follow a budget (e.g., develop a spending plan, saving plan, record keeping system, investment plan, track budget performance).
- Use sound buying principles (e.g., compare costs and benefits, make informed choices) for purchasing goods and services.
- Study or pursue specific job interests.
- Make general preparation for entering the work force.

**Sources:** National Council of Teachers of Mathematics (NCTM) Mathematics Standards; National Health Education Standards; Mid-Continent Research for Education and Learning (MCREL)

**Materials & Preparation**
Read through the lesson in its entirety and highlight sections you want to cover, given your particular time constraints and group of students.
- Beforehand, ask each student to collect 100 pennies and bring these to class in a jar or plastic bag. Students can ask family and friends to help in the collection. They can also cash in a dollar for 100 pennies at a bank. In lieu of pennies, students can also use paper clips, Cheerios, or another small object that’s easy to procure.
- Photocopy the “Monthly Expense Report,” one per student.
- Photocopy the “Money & Me” handout, one per student.
Procedure

100 Pennies a Month: Budgeting Basics

Time Estimate: 20-30 minutes

Introduce a simple scenario:

You have just been transported to a place where you can meet all of your needs by living on 100 pennies a month. You are in your early 20s, living on your own, and must pay all of your expenses yourself.

- Ask someone to define the term “expense.” Then brainstorm a list of living expenses on the board: “What do you need, and want, to spend your pennies on each month? Let’s make a list…”

- Teaching note: The point of this brainstorm is to get a quick list of expense categories on the board, not to discuss actual costs. Don’t worry, at this point, whether students know the costs or the relative costs of expenses.

- Help students group individual expenses into general categories. Students will likely omit some key categories, so prompt as needed. E.g., What if you get sick? (healthcare); What if you need a new sofa, bed, or set of plates? (home furnishings); What if you’ve outgrown your shoes? (clothing); How will you keep your lights turned on? (utilities); etc.

- Sample list of expense categories. Note: Students’ initial list will likely be more specific and playful!

  Monthly Living Expenses
  
  Housing
  Transportation
  Food
  Healthcare
  Utilities
  Clothes
  Telephone
  Cable TV/Internet service
  Entertainment
  Home furnishings & supplies
  Books & magazines
  Miscellaneous categories

- Ask students to take out their pennies. Give each student a “Monthly Expense Report” handout, and explain the directions:
  1. Write your monthly expenses in the left-hand column.
  2. Divide your pennies into stacks to show how much you’ll spend on different expenses. Place pennies next to the listed expense.
  3. After you finish dividing your money into stacks, write down how you decided to spend your income in the right-hand column.
**Review an example:** Housing—rent or a mortgage—is an expense that typically costs about 25% of a person’s income. Your income is 100 pennies a month. What is 25% of 100 pennies? (25 pennies.) Place these in a stack next to “Housing”.

**When students are done, offer congratulations:**

Congratulations! What you just created is the start of a budget. Can anyone explain what a budget is?...

Budgets are based on the amount of money you have (income) compared with the amount of money you spend (expenses).

Ask students to walk around the room and compare their financial choices: “Notice the different choices people make with their money. Who has decided to spend a lot on clothes? On a car? On a home?” Set a few ground rules: 1) Look, don’t touch, 2) Quietly notice how people spend their money, and 3) Be ready to talk about what you’ve noticed.

**Select from the following discussion questions:**

1. What kinds of things did you notice as you looked at everyone’s expense budgets?
2. What three categories did you spend the most money on? How come?
3. Look again at your list. Which of these are “fixed” expenses: things you need to spend money on in order to survive? Write an “F” next to fixed expenses. Prompts: Can you live without food? Can you live without watching TV?
4. Which of these are “variable” expenses: things you want, but don’t necessarily need to survive? Write a “V” next to variable expenses.
5. When you’re in your 20s and living on your own, where will your “100 pennies”—your income—come from? Prompts: Will you have a paying job? Live off of an inheritance? Do you expect your parents to support you?
6. What happens if you earn more money than you spend? Discuss “profit” (income minus expenses) and the notion of being “in the black.”
7. If you have a profit, what will you do with your extra money? Ask for a show of hands: a) You’ll spend it on “variable,” fun purchases. b) You’ll save it. c) You’ll share it with others by donating to a charity or treating someone you know.
8. What happens if you spend more than you earn? Discuss “loss” and the terminology of being “in the red.”
9. What are ways to get “out of the red” and bring your budget back into balance? Prompts: What can you do to earn more money? To cut down on expenses?

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**Me & Money Today**

*Time Estimate: 20-30 minutes*

**Introduce the activity:**

Of course, you don’t have to wait until you’re older to start making wise money decisions. Let’s get a quick idea of how each of us relates to money right now.

- Pass out the “Money & Me” handouts and allow students a few minutes to complete. Then move directly into the discussion questions.
- Money can be a difficult topic, even for children. Try to frame the discussion in a way that helps to make everyone feel comfortable. Sample script:

  We’re going to have a discussion about money. Since money is a personal matter, I’m sure that each of you has a different story to tell about money in your life. For example, some of your families may have a lot of money, others may have less. Some of you may get an allowance, while others don’t. Some of you may never receive money as a gift, while others do. Whatever your money habits are or money situation is, I’d like everyone to
feel comfortable joining in the discussion. So let’s agree at the start that all of our experiences are valuable and deserve respect. No one’s better than anyone else simply because they have more money. Everyone in agreement?

Discussion questions:
1. What does it feel like to talk about money? Prompts: Do members of your family ever talk about money? Are these pleasant or unpleasant conversations?
2. Does anyone remember the first time you received money? How old were you, and what did you do with it? Prompts, if needed: Did you spend it all? Did you share some of it? Did someone encourage you to save some for later?
3. If you get an allowance or earn money, what is the source of your income? Does the amount seem fair? Do you ever budget your income for different kinds of things?
4. What are your main expenses today? Are these fixed or variable expenses?
6. Show of hands: How many of you have ever raised money for, or donated money to, a cause you care about? Ask several students to explain.

• Ask student pairs to brainstorm answers to the following question and write down answers on a piece of paper:
  “What are 5 ways you can get an income or increase the one you already have? Be creative!”
  Prompts, if needed: How about babysitting? Making greeting cards? Walking a neighbor’s dog when they’re away? Making sandwiches with a friend to sell at soccer games?

• Document a list of “entrepreneurial” ideas on the board.

Sample Wrap-Up:
It’s never too soon to practice wise money-making and money-spending! All together, this is called “money management.” Money management is a skill you’ll be called upon to use throughout your life. Every business, every family, every sports team, every theatre company, every person has to budget and manage money. So it really pays off to learn how money works and to start making thoughtful decisions—starting today—about how to earn, spend, save, and share money.

Optional Extensions

Comprehensive Budget
Time Estimate: 1 class period, plus research time

Challenge older students to create more sophisticated budgets based on real-world costs. Students choose future professions: What’s the best job you can think of—for you? Students research average or base salaries in the “Help Wanted” section or online. (Search by job title and find out average national salaries on the Bureau of Labor Statistics’ “Kids Page”: www.bls.gov/k12/. Get median salary figures for jobs in specific cities at www.salary.com.) Students use these figures to create a new budget based on the real costs of housing, health insurance, food, etc. Student teams come up with cost averages for different expense categories. Teams conduct research on-line, by reading newspapers, or by actually visiting grocery stores, car dealerships, home furnishing stores, and documenting prices.
Money Matters Interview

*Time Estimate:* homework assignment, plus 20 minutes debriefing

Students come up with questions and interview a parent or another adult in their lives about money matters. Four questions to start: 1) When you were a kid, did you talk about money with grown-ups? Why or why not? 2) Did you earn money when you were my age? If so, how? What did you do with your earnings? 3) What do you wish you had learned about money when you were my age? 4) Do you feel like you manage your money well today? Why or why not? Debrief as a class.

Money Matters Word Search

*Time Estimate:* 30 minutes

How many words can students come up with that are in any way related to money or money management? Compile a list on the board; define any unfamiliar terms. Examples: taxes, saving, spending, invest, stocks, bank, entrepreneur, income, expenses, profit, checkpoint, paycheck, etc. Each student creates a “Word Search” game, using terms on the board. On a graph paper, students write words in a way that letters overlap (as in Scrabble). Words can be arranged horizontally, vertically, or diagonally. Once words are connected, fill in all blank spaces with any letters from the alphabet until all words are hidden. Photocopy Word Searches and swap among students.

Company Financials

*Time Estimate:* 15-30 minutes

Show students your company’s annual report and discuss the financial “story” told by the report.

Budget Guessing Challenge

*Time Estimate:* 20 minutes

Ask students to guess the top 3 expenses for your company. Write these down on a piece of newsprint. Then ask students to guess the dollar amount of each expense. Tell them “higher” or “lower” until they get into the correct range. Do students know where money comes from to pay for these expenses?

Select Resources


The “Checking Up on Math” Web page ([www.galaxy.net/~k12/checks/index.shtml](http://www.galaxy.net/~k12/checks/index.shtml)) supplies basic materials for students to make their own checkbooks and learn how to use them.
<table>
<thead>
<tr>
<th>Monthly Living Expenses</th>
<th>100 Pennies</th>
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<tbody>
<tr>
<td>1.</td>
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</table>
Money & Me

Take this short quiz to get a better idea of how you manage your money today.

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<tr>
<th></th>
<th>Always</th>
<th>Sometimes</th>
<th>Rarely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I pick up coins that I see on the ground.</td>
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<td>2.</td>
<td>I save money for special things that I want to buy.</td>
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<td>3.</td>
<td>I treat friends for ice-cream or pizza or something else.</td>
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<td>4.</td>
<td>I compare prices before I buy something to figure out the best deal.</td>
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<td>5.</td>
<td>I make donations to organizations or causes I care about.</td>
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<tr>
<td>6.</td>
<td>I’m happy to see the amount of money in my bank account, or piggy bank, increase.</td>
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<td></td>
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<tr>
<td>7.</td>
<td>I buy things I don’t need when I go shopping.</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>If I get money from relatives on a special occasion, I save some of it.</td>
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<tr>
<td>9.</td>
<td>I want things that I see on TV or because a friend has one.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>I buy presents for people when I’m on vacation.</td>
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</tbody>
</table>

1 This activity was developed in collaboration with Jan Ham, Program Director for Learning By Design in Massachusetts, a children’s design education program of the Boston Society of Architects.

2 This activity is based on the “Life on 100 Pennies a Month” activity in Money Matters: An Economic Literacy Kit for Girls (New York, 1999: Girls Inc.). Used with permission of Girls Inc., one of the nation’s leading advocates for girls.
SCALE FIGURES

1. Bend a 12” pipe cleaner in half. Insert a pencil at the top bend, and twist twice just below the pencil to form the “head” and “neck.” Figure should now match Step 1.

2. Raise the two long ends straight out, one to each side of the figure; then bend them back in at a point ½” out from the “neck,” creating ½”-long arms as in Step 2. (hint: to help with this step, lay your figure right down on the Step 2 illustration.)

2a. Twist the “body” twice just below where the arms meet the body (to keep the body together). Figure should now match Step 2.

3. Bend the two long ends up, bringing the ends up to the “waist.” (This thickens and shortens the legs.) Figure should now match Step 3.

4. Bend the bottom of each “leg” into large “feet.” Figures should now match Step 4, and be approximately 1 and ½ inches in height.

5. Staple the “feet” to a square of oaktag, or half of a 3”x5” index card.

6. Cut a fabric scrap into a 1.5” x 2.5” rectangle; cut a ½” slit in the center of the fabric scrap (along the long axis) to create a simple “poncho.” Slip the poncho over the figure’s head (fabric covering the front and back of the figure).

7. Tie the fabric poncho in place with a “belt” made from a 5” length of yarn. (hint: work with a partner, one person holds the figure and fabric, one person ties the belt.)

8. Add details to personalize your figure: yarn for hair, a hat, a bag, stroller, pipe-cleaner pet, etc.

Learning By Design in Massachusetts
A Boston Society of Architects design education program for children and teachers
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Dear Parents and Guardians,

In conjunction with Take Our Daughters And Sons To Work® Day, our class has been discussing basic money matters: why budgets are important, how to set spending priorities, the difference between “fixed” and “variable” costs, ways to get out of “the red,” the importance of saving, etc. I encourage you to extend this lesson and continue this discussion at home.

Here are some sample questions/topics for you to discuss with your child:

1. What were you told and what do you wish you’d been told about money when you were your child’s age? What does your child need to know?

2. Did you earn money when you were your child’s age? If so, how? What did you do with your earnings?

3. How well does your child “manage” his or her money (allowances, gifts, babysitting earnings, etc.)? How can you teach your child to manage money better?

Thank you for your interest and participation.

Best,