**Human Scale**

**A Lesson in Proportion**

**Visual Art Objectives:**

1. Create a 2-dimensional human figure in a selected pose using correct proportions.
2. Design clothes for the figure and give it a name.

**Math Objectives:**

1. Measure a peer using a non-standard unit of measurement.
2. Write the measurements as ratios and fractions.
3. Adapt the proportions of his or her own body to create a small paper figure.
4. Recognize the fractions found in the measurement of the human body.

**Language Objectives:**

1. Write a tall tale about the character that he or she creates from paper.

**Vocabulary:** proportion, fraction, unit of measurement, ratio, tall tale

**Content Standards:**

MATH

* Strand 1: Number and Number Relations: In problem-solving investigations, students demonstrate an understanding to the real number system and communicate the relationships within the system using a variety of techniques and tools.
* Strand 3: Measurement: In problem-solving investigations, students demonstrate an understanding of the concepts, processes, and real-life applications of measurement.
* Strand 5: Data Analysis, Probability and Discrete Math: In problem-solving investigations, students discover trends, formulate conjectures regarding cause-and-effect relationships, and demonstrate critical thinking skills in order to make informed decisions.
* Strand 6: Problems, Relations and Functions: In problem-solving investigations, students demonstrate an understanding of patterns, relations, and functions that represent and explain real-world situations.

ELA

* Standard Two: Students write competently for a variety of purposes and audiences.
* Standard Three: Students communicate using standard English grammar, usage, sentence structure, punctuation, capitalization, spelling, and handwriting.

VISUAL ARTS

* Critical Analysis: Students make informed verbal and written observations about the arts by developing skills for critical analysis through the study of and exposure to the arts.
* Creative Expression: Students develop creative expression through the application of knowledge, ideas, communication skills, organizational abilities, and imagination.

**Anticipatory Set** (5 minutes)

Look at *Karma* by Do-Ho Suh and/or *Overflow* by Jaume Plensa and discuss the artists’ rendering of the human body. Ask students if they think the proportions are correct on these sculptures. Explain that proportion is the relationship between the sizes of each part. The teacher may show other examples of figurative sculptures such as Michaelangelo’s *David* or Antoine Bourdelle’s *Archer*. TTW explain that while all bodies are not the same, there is a system for proportion that artists use and that the class is going to test out this system.

**Procedures**

Students will use non-standard units of measurements as well as fractions including one-sixth, one-third, and one-half to measure and reproduce on a smaller scale the proportions of the body using the following approximations:

* The head and neck are approximately one-sixth the length of the body.
* The torso (shoulders to hip joint) is approximately two-sixths or one-third the length of the body.
* The legs are three-sixths or one-half the length of the body.
* The knee is half the distance from the hip to the heel.
* The upper arm is approximately equal to the length of the head.
* The lower arm is approximately equal to the length of the foot.
* The distance from fingertip to fingertip is approximately equal to the length of the entire body.
* The feet are approximately the length of the head.

**Guided Practice** (10 minutes)

Students work in pairs to measure each other using non-standard units of measurement. Each student should first measure the length of the head and neck of his or her partner with a piece of string to establish the unit of measurement. Mark on the piece of string this distance using a pen. Each pair will then measure the height and the distance of the outstretched arms from fingertip to fingertip to determine that these lengths are approximately equal. Measure at least two other distances from the above list to determine ratios (feet/head, torso/whole body, head and neck/whole body). Draw a stick figure to illustrate his or her own proportions (see attached worksheet).

**Independent Practice** (10 minutes)

Working individually, take a sheet of 12” x 18” paper and fold the paper in half (hamburger), in half again, and in half again. Each student should have 8 sections. Ask students to X out the top and bottom sections, so that they are working with 6 sections. Using the stick figure sketch from the measuring activity, and a small piece of string for measuring, each student should:

1. Draw an oval head in the top section that touches the top and the bottom of the section.
2. Draw a line from the oval straight down so that it crosses two complete sections.
3. At the top of that and a little below the oval, draw a horizontal line to form the shoulders. Make it about as wide as the length of the head.
4. Draw a similar line at the bottom of the line to form the hips.
5. From each side of the hip line, draw a line that goes all the way to the bottom of the remaining three sections (legs). Place a mark mid-way along this line (knee).
6. Draw lines the same size as the head at the end of each leg (feet).
7. From each shoulder, draw one head length to the elbow and another head length to the wrist for the arm.
8. Draw a line about half the length of the head for each hand.

**Art Extension**: (15 minutes)

Using the drawn figure as a model, TSW create a moveable figure by measuring and cutting pieces of card stock to make each part of the body.

* **Head**  Start with a 2” x 3” rectangle of white paper and trim it into an oval. This is the head and will be used as the non-standard unit from which all other body parts will be measured.
* **Torso** Measure and cut a strip of paper to create a torso that is two units long.
* **Arms** Measure and cut four strips, one unit long each, to represent the four sections of the arms.
* **Legs** Measure and cut out two long narrow strips, three units long each, to represent the legs. Fold them and cut them in half, yielding the four leg parts.
* **Feet**  To make the feet, measure and cut a rectangle that is about one head long and half a head wide. Cut it into two triangles (diagonal to opposite corners).
* **Hands** To make the hands, measure and cut a rectangle that is about half the length of the head and about half as wide. Cut this rectangle into two triangles.
* Attach the body parts together using metal paper fasteners so that each part is moveable.
* Use construction paper or magazines to collage, TSW add clothing to the figure.

**Writing Extension:**

TSW write a tall tale describing his or her character.TTW remind students that a tall tale is an exaggerated story.TTW remind students of tall tales they have studied or read or tell an example such as stories of Paul Bunyan, Brer Rabbit, John Henry, Johnny Appleseed or Pecos Bill.

**Closure:** (10 minutes)

TSW return to their pairs and tell each other about the figure that he or she created.

TSW describe at least two proportions of the figure. For example: His body is 6 times longer than his head. His outstretched arms are the same length as his body. The partner will check the measurements of the figure using a piece of string. TTW ask for volunteers to share his or her tall tale with the class.

**Materials:**

Examples of sculptures (digital or color copies)

Human Scale worksheet

String or yarn

18” x 12” paper

Pencil

Pen or marker

Strips or sheets of card stock

Metal fasteners

Construction paper or magazines for making clothing.

*Portions of this lesson adapted from Valleypbs.org* */art-is/season\_1/5-Proportions of the Body.pdf*

**Human Scale Worksheet**

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| Body Part | Units | Fraction | Ratio |
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Draw a Stick Model here: