

Amateur



Architect



Amateur Architect - Ruler Skills 1

Measuring Line Segments

Measure each line segment to the nearest $\frac{1}{16}$ " and write the length in the box under the segment. Use mixed numbers when appropriate and write each number in simplest form.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____





Amateur Architect - Ruler Skills 2

Drawing Line Segments

Place a point at the beginning of each line segment. Then measure the given distance from the starting point and place an endpoint. Finally, shade in the segment between the two points.

1) $4 \frac{5}{16}$ " _____

2) $1 \frac{7}{16}$ " _____

3) $5 \frac{3}{16}$ " _____

4) $2 \frac{1}{8}$ " _____

5) $3 \frac{3}{4}$ " _____

6) $5 \frac{1}{16}$ " _____

7) $4 \frac{1}{2}$ " _____

8) $3 \frac{5}{8}$ " _____

9) $\frac{15}{16}$ " _____





Amateur Architect

Use the following directions to construct your street, curb, house, and garage.
(NOTE: All dimensions are given as length by width (l x w). Length is measured from left to right. Width is measured from top to bottom.) Use a clean, white sheet of paper turned to landscape mode.

I. Street and Curb

1. The street is $11'' \times 1 \frac{1}{2}''$ and is located at the very bottom of the page.
2. a) A broken median line runs the length of the street. Each median segment is $1'' \times \frac{1}{8}''$ and segments are spaced $1''$ apart.
b) Center these segments between the street line and the bottom edge of the paper.
c) The first median segment begins $1''$ from the left edge of the paper.
3. The curb line rises $\frac{1}{4}''$ above the street line and is parallel to the street line.

II. House

1. The left side of the house is $\frac{1}{2}''$ from the left edge of the paper.
2. The length of the front wall of the house is $\frac{9}{16}$ of the length of the paper.
3. The width of the front wall of the house is $2 \frac{15}{16}''$ less than the length of the house.
4. The distance between the top of the house's front wall and the top of the roof is ten times the width of one broken median segment in the street.
5. The roof angles in at 40° from each top corner of the house. The top of the roof is parallel to the top of the front wall.

III. Garage

1. The distance between the right side of the house and the left side of the garage is $\frac{36}{48}''$.
2. The length of the garage is $1 \frac{7}{8}''$ more than the distance from the top of the house wall to the top of the house roof.
3. The width of the garage is $3 \frac{7}{16}''$ less than the length of the house.
4. The garage roof angles in at 35° from each top corner of the garage and meets at a point.





Amateur Architect - Fraction Calculations

The calculation numbers below correspond to the numbers on the Amateur Architect project. Show all of your work and then place the answer for each calculation in the answer box. Problems without answer boxes can be solved in more than one way. All fractions should be reduced to simplest form.

I-2 Centering Median Segments	II-2 Length of the Front Wall	II-3 Width of the Front Wall
II-4 Distance Between Top of Wall and Top of Roof	III-2 Length of the Garage	III-3 Width of the Garage
IV-1 Location of Door	IV-2 Width of House Door	V-1 Center Left Window
V-2 Center Right Window	VI-1 Center Garage Door	VI-3 Five Equal Garage Door Panels

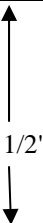
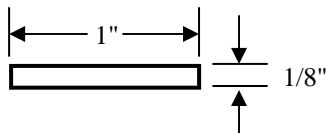
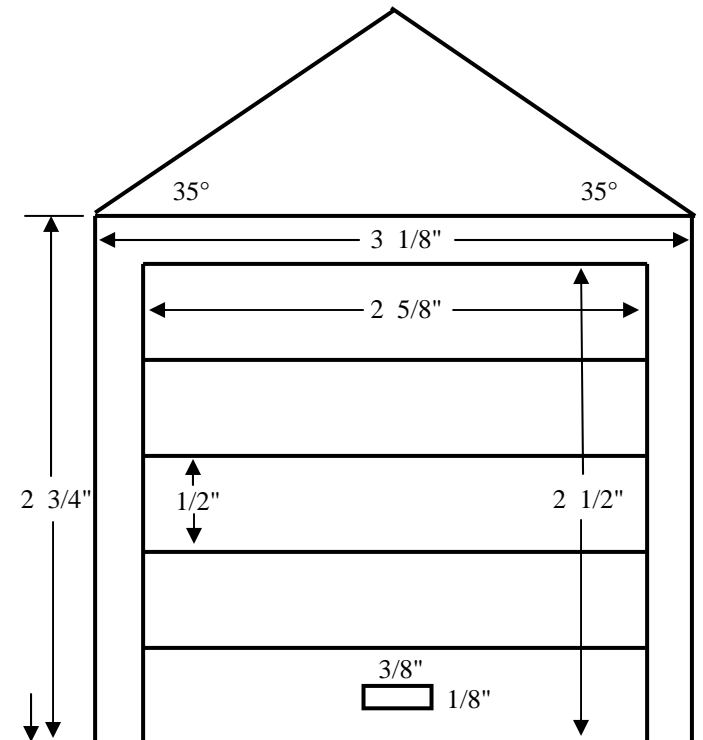
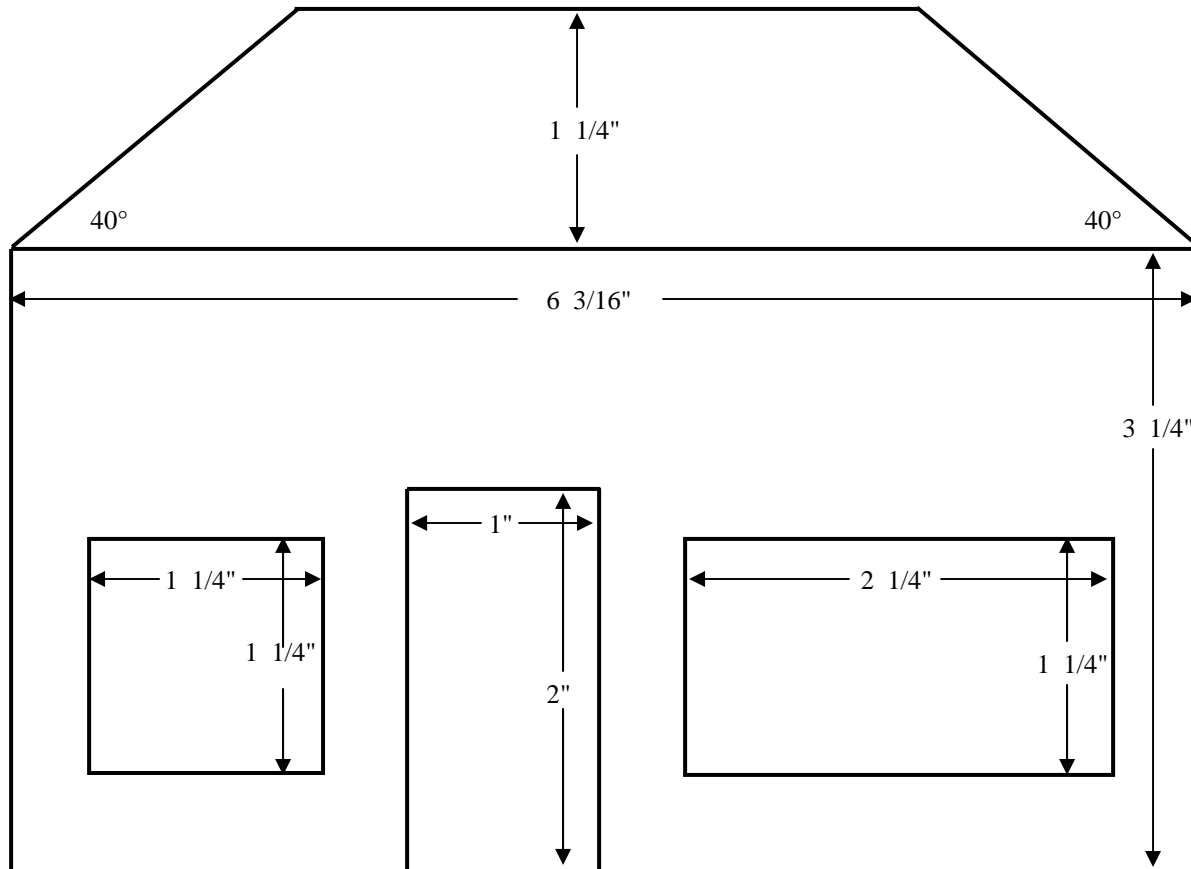


Amateur Architect

Grading Template



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Teacher Tips

Amateur Architect

Page 1

Lesson Description: Amateur Architect is a hands-on math project that requires students to compute fraction operations problems and use the resulting measurements to construct a house and garage. Students use pencil and ruler to draw and center parts of the house and garage. This project combines the foundational skill of solving fraction operation problems with the practical application of ruler measuring skills.

Math Content: Fraction Operations, Measuring and Constructing Drawings with a Ruler

Time Required: This project usually takes about 4 - 7 class periods, depending on whether or not the Ruler Skills worksheets are used and if you allow any part of the project (such as the final title and drawing) to be done at home.

Amateur Architect includes:

- * 1 Amateur Architect project cover sheet
- * 3 Ruler Skills worksheets (for optional preparation prior to the Amateur Architect project)
- * 3 Ruler Skills answer keys
- * 2 Amateur Architect project pages
- * 1 Amateur Architect project Fraction Calculations worksheet
- * 1 Amateur Architect project Fraction Calculations worksheet answer key
- * 2 Amateur Architect Grading Templates (one with dimensions included)
- * 1 Amateur Architect Project Terms Transparency
- * 2 Amateur Architect Teacher Tips pages
- * 1 Amateur Architect Grading Rubric

17 pages in all!!

Materials Needed: Rulers (class set), two transparencies, construction paper (optional)

Suggested Grade Level: 5th -8th

Teacher Tips:

- * **Before printing** make sure “**NONE**” is selected for Page Scaling. Otherwise templates of project and lengths of segments on Ruler Skills pages will not be accurate.
- * Have students calculate and draw simultaneously. Some students want to solve all of the problems first. **Some calculations depend on previous calculations**, so it is important to be able to visualize the reasonableness of math calculations by drawing them.
- * Calculations should be shown, with all work, on the Fraction Calculations worksheet.
- * Teach, and encourage students to use, at least two guide points when constructing lines.
- * Grading for the project is very fast!! Simply check the main calculations using the answer key and then **place a transparency of the project over the student’s work** to check for accuracy. Line up the left side of the house and the curb line as reference points, **not** the edge of the transparency. (Note: Projects will not be perfectly accurate but look at the number and degree of miscalculations or incorrect drawings.) See Grading Rubric.

