

List of Materials to Support the Instruction of

Hands-On Math: Let's Carpet a Small House

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- Introduction
- History
- How to Measure a Carpet
- Floor Plan Exercise
- Figuring the Amount of Carpet Exercise and Answer Sheet
- Match the Word Exercise and Answer Sheet
- Crossword Puzzle and Answer Sheet

Hands-On Math

Topic: Let's Carpet a Small House

**Related to Standards of Colorado Certificates of Accomplishment
ABE II, 2M19**

SKILLS NEEDED: Students will use math skills to calculate square footage and cost of a new carpet. Review with students the process for calculating square footage, and for converting square feet to square yards. Using various prices from the newspaper, have students calculate the cost of carpet for a small house.

VOCABULARY: backing, binding, broadloom, density, glue, indoor, level loop, loop pile, outdoor, patterns, pile, plush, ply, power stretcher, seams, seam sealing, serging, soil retardant, square feet, square yards, tackless strip, texture, tuft bind, twist, underlay, wall to wall, woven, yarn ply

MATERIALS: pencil, paper, calculator, measuring tape, a newspaper containing an ad for carpet.

Carpet a Small House

A Little History of the Carpet Industry in the USA

Native Americans were weaving baskets and rugs long before Europeans began to settle in the United States. Today, Native Americans still excel in the art of rug weaving, and their craft is not likely to be matched.

The large-scale commercial carpet industry in the United States began in 1791. William Sprague started the first woven carpet mill in Philadelphia. Other mills opened during the early 1800s in New England.

In 1839, Erastus Bigelow invented the power loom for weaving carpets. That significantly affected the carpet industry. The loom doubled the carpet production the first year after its creation and tripled it by 1850. Bigelow continued to devote his life to modernization. He held 35 separate patents, issued to him between 1839 and 1876. Bigelow introduced the first broadloom carpet in 1877.

The power loom with Jacquard mechanism was developed in 1849. The Brussels loom was slightly modified, making possible the manufacture of Wilton carpet. Later,

the Hartford Carpet Company joined with Clinton Company to become Bigelow Carpet Company.

The four Shuttleworth brothers brought 14 looms from England in 1878 and established their manufacturing plant in Amsterdam, New York. In 1905, the company introduced a new carpet, Karnak Wilton. It was an instant success. The company had so many orders that a new building had to be constructed to exclusively handle Karnak production. Weavers worked four and five years without changing either the color or pattern on their looms.

Alexander Smith started his carpet manufacturing plant in 1845 in West Farms, New York. Halcyon Skinner, an American, perfected the power loom for making Royal Axminster in 1876. He and Alexander Smith combined, forming a very successful carpet company. Alexander was elected to Congress in 1878, but died on the evening of election day. Sixteen hundred people were employed at his factory at the time of his death. Alexander Smith & Sons continued. During World War I, the carpet looms were converted to make tent duck and navy blankets. In 1929

**Alexander Smith & Sons was the largest manufacturer of
carpets and rugs in the world.**

Measuring for Flooring
It's as easy as 1-2-3

Step 1: Draw a layout of the area that requires new flooring.

To begin, do a layout drawing of each room or area that requires new flooring. Simply sketch out the shape of the area on graph paper, indicating doorways and any recesses including closets.

For stairs, simply count the number of stairs and measure their width.

Step 2: Measure the length and width.

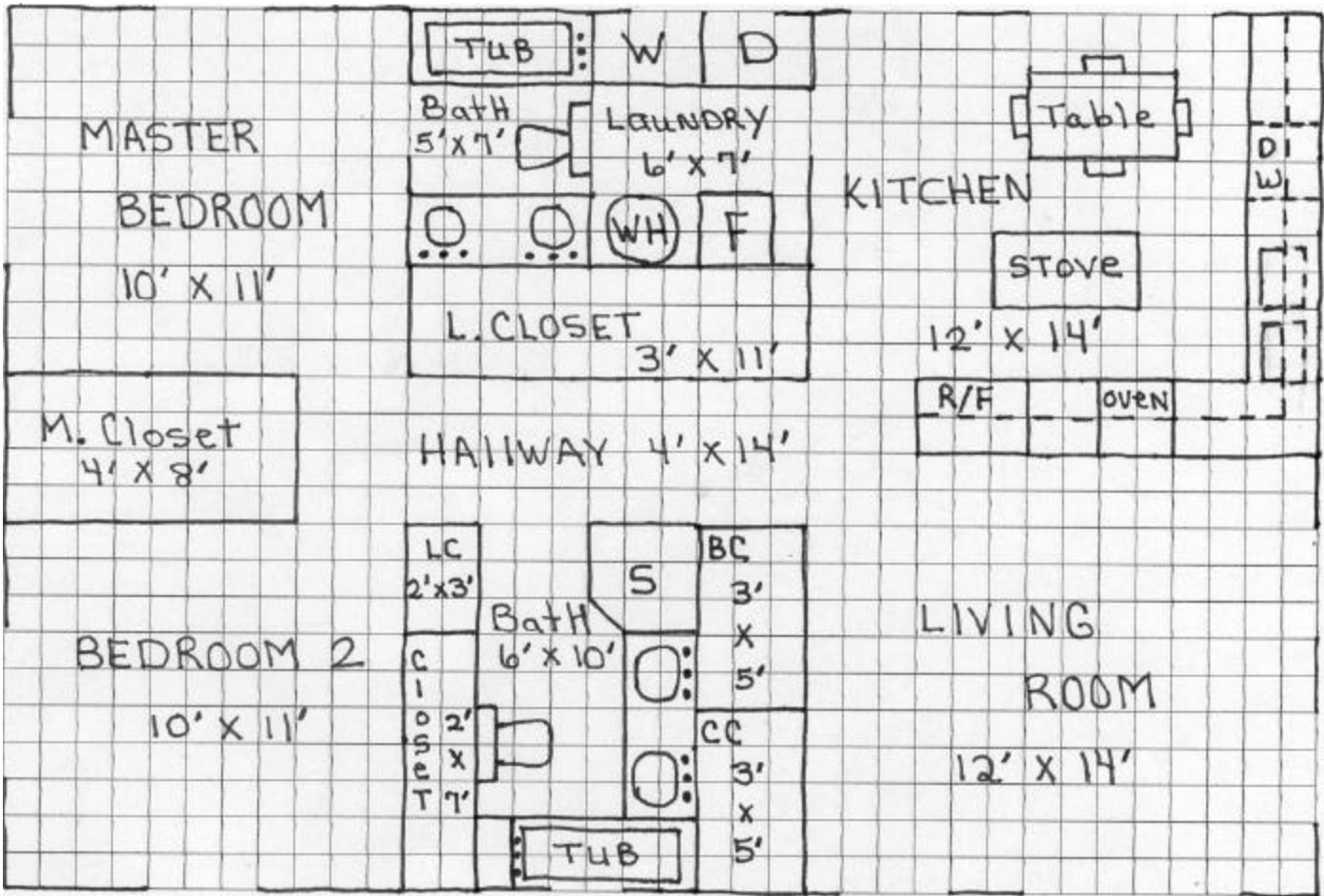
Find the longest length in the room and measure it. Now find the widest point and the room and measure it. Add three inches to each measurement. This allows for trimming. Make sure you measure into all doorways.

Step 3: Congratulations - your floor plan is complete.

Carpet a Small House

Floor Plan for Hands-on-Math Project

This house is one story high, 36 feet wide, 24 feet deep. It has two bedrooms, two full bathrooms, a kitchen, and a living room. One of the bedrooms is a master bedroom with a private bathroom. The laundry room also houses the furnace and water heater. The separate broom, coat and two linen closets are unusually large.



Carpet a Small House

Hands-on-Math – Figuring Square Feet and Square Yards for Carpet Installation

1. Figure Square feet in each room
2. Figure Square yards of carpet needed in each room
3. Figure Total Square feet in entire house
4. Figure Total Square yards of carpet needed in house

Master Bedroom – 10.0 feet by 11.0 feet

Square Feet: _____ Square

Yards: _____

Master Closet – 4.0 feet by 8.0 feet

Square Feet: _____ Square

Yards: _____

Master Bath – 5.0 feet by 7.0 feet

Square Feet: _____ Square

Yards: _____

Bedroom 2 – 10.0 feet by 11.0 feet

Square Feet: _____ Square Yards: _____

Bedroom 2 Closet – 2.0 feet by 7.0 feet

Square Feet: _____ Square

Yards: _____

Living Room – 12.0 feet by 14.0 feet

Square Feet: _____ Square

Yards: _____

Hall Way – 4.0 feet by 14.0 feet

Square Feet: _____ Square

Yards: _____

Main Bath – 6.0 feet by 10.0 feet

Square Feet: _____ Square

Yards: _____

Kitchen – 12.0 feet by 14.0 feet

Square Feet: _____ Square

Yards: _____

Laundry Room – 6.0 feet by 7.0 feet

Square Feet: _____ Square

Yards: _____

Linen Closet 1 – 3.0 feet by 11.0 feet

Square Feet: _____ **Square**
Yards: _____

Linen Closet 2 – 2.0 feet by 3.0 feet

Square Feet: _____ **Square**
Yards: _____

Broom Closet – 3.0 feet by 5.0 feet

Square Feet: _____ **Square**
Yards: _____

Coat Closet – 3.0 feet by 5.0 feet

Square Feet: _____ **Square**
Yards: _____

House is 36.0 feet wide and 24.0 feet deep

Square Feet: _____ **Square**
Yards: _____

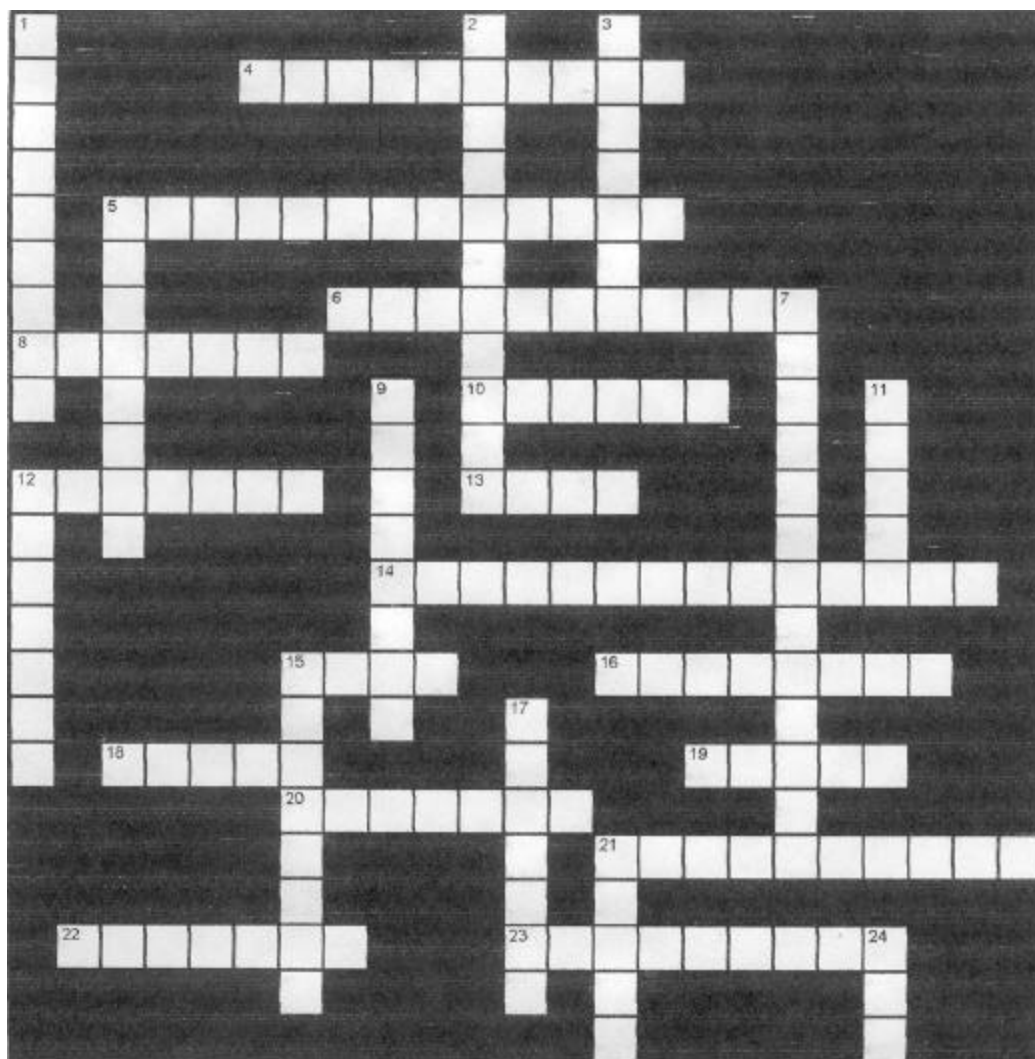
Carpet a Small House

Answer Sheet for Hands-on-Math – Figuring Square Feet and Square Yards for Carpet Installation

1. Figure Square feet in each room
2. Figure Square yards of carpet needed in each room
3. Figure Total Square feet in entire house
4. Figure Total Square yards of carpet needed in house

Master Bedroom – 10.0 feet by 11.0 feet	
110 Square feet in bedroom	12.22 Square Yards of Carpet
Master Closet - 4.0 feet by 8.0 feet	
32 Square feet in closet	3.55 Square Yards of Carpet
Master Bath – 5.0 feet by 7.0 feet	
35 Square feet in bath	3.88 Square Yards of Carpet
Bedroom 2 – 10.0 feet by 11.0 feet	
110 Square feet in bedroom 2	12.22 Square Yards of Carpet
Bedroom 2 Closet – 2.0 feet by 7.0 feet	
14 Square feet in closet 2	1.55 Square Yards of Carpet
Living Room – 12.0 feet by 14.0 feet	
168 Square feet in living room	18.66 Square Yards of Carpet
Hall Way – 4.0 feet by 14.0 feet	
56 Square feet in hall way	6.22 Square Yards of Carpet
Main Bath – 6.0 feet by 10.0 feet	
60 Square feet in bath	6.66 Square Yards of Carpet
Kitchen – 12.0 feet by 14.0 feet	
168 Square feet in kitchen	18.66 Square Yards of Carpet
Laundry Room – 6.0 feet by 7.0 feet	
42 Square feet in laundry room	4.66 Square Yards of Carpet
Linen Closet 1 – 3.0 feet by 11.0 feet	
33 Square feet in linen closet 1	3.66 Square Yards of Carpet
Linen Closet 2 – 2.0 feet by 3.0 feet	
6 Square feet in linen closet 2	0.66 Square Yards of Carpet
Broom Closet – 3.0 feet by 5.0 feet	
15 Square feet in broom closet	1.66 Square Yards of Carpet
Coat Closet – 3.0 feet by 5.0 feet	
15 Square feet in coat closet	1.66 Square Yards of Carpet
House is 36.0 feet wide and 24.0 feet deep	
864 Square feet in entire house	95.92 or 96 Square Yards of Carpet

Carpet a Small House



3 letter word

PLY

4 letter words

GLUE

PILE

5 letter words

PLUSH

SEAMS

TWIST

WOVEN

6 letter word

INDOOR

7 letter words

BACKING

BINDING

DENSITY

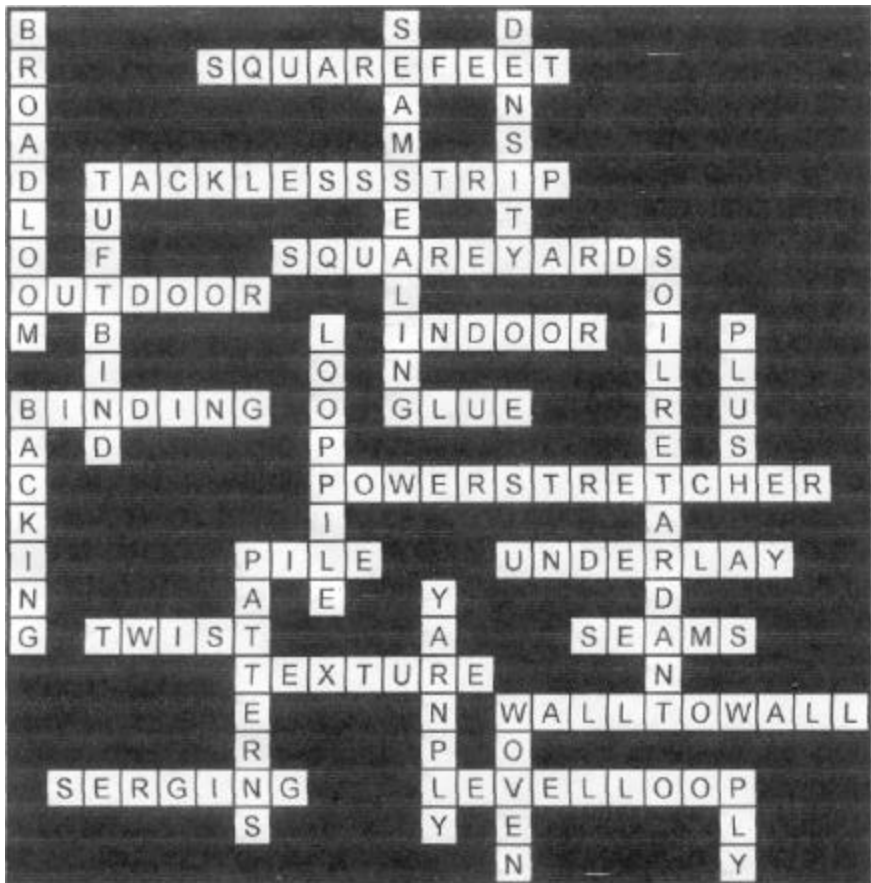
OUTDOOR

SERGING

TEXTURE

YARN PLY

Carpet a Small House



Carpet a Small House

Match the word with the correct definition.

Place the correct number next to the correct definition.

- A. _____ An adhesive substance or solution
- B. _____ A band or strip sewn over a carpet edge to protect, strengthen or decorate the edge.
- C. _____ A line formed by joining the edge of two pieces of carpet by the use of various seaming tapes, hand sewing or other techniques.
- D. _____ A term used to denote carpet produced in widths wider than 6 feet.
- E. _____ Fabrics and yarns that make up the back of the carpet as opposed to the carpet pile or face.
- F. _____ Refers to the amount of pile yarn in the carpet and the closeness of the tufts.
- G. _____ Any artistic or decorative design
- H. _____ The appearance of a fabric resulting from the woven arrangement of its yarns or fibers
- I. _____ A type of carpet that can be used indoors or outdoors
- J. _____ A system of units used in measuring carpet
- K. _____ A rug that is laid from one wall to another on all four sides
- L. _____ A system of units used in measuring area
- M. _____ The number of single yarns twisted together to form a plied yarn.
- N. _____ A type of carpet that can be used only indoors
- O. _____ A carpet construction in which the yarn on the face of the carpet forms a loop with both ends anchored into the carpet back.
- P. _____ Carpet style having a pile surface consisting of uncut loops.
- Q. _____ The visible surface of carpet consisting of yarn tufts in loop and/or cut configuration.
- R. _____ Luxuriously smooth-textured carpet surface in which individual tufts are only minimally visible and the overall visual effect is that of a single level of yarn ends.

- S. _____ A carpet installation tool used to stretch carpet for installation with a tackless strip.
- T. _____ A single-end component in a plied yarn. The number that tells how many single ends have been ply-twisted together to form a plied yarn.
- U. _____ Procedure of coating the trimmed edges of two carpet breadths to be joined with a continuous bed of adhesive in order to prevent fraying and raveling at the seam.
- V. _____ A method of finishing edges of area rugs by use of heavy, colored yarn sewn around the edges in a close, overcast stitch.
- W. _____ A chemical finish applied to fibers or carpet surfaces that inhibits attachment of soil.
- X. _____ Wood or metal strips fastened to the floor near the walls of a room containing either two or three rows of pins angled toward the walls on which the carpet backing is stretched and secured in a stretch-in installation.
- Y. _____ Force required to pull a tuft from the carpet
- Z. _____ The winding of the yarn around itself.
- a. _____ Carpet cushion under rugs.
- b. _____ Carpet produced on a weaving loom in which the lengthwise yarns and widthwise yarns are interlaced to form the fabric, including the face and the backing.

Word List

- | | | |
|---------------------|--------------------|---------------------|
| 1. Indoor | 2. Outdoor | 3. Backing |
| 4. Yarn ply | 5. Texture | 6. Seams |
| 7. Square Feet | 8. Patterns | 9. Binding |
| 10. Wall to Wall | 11. Broadloom | 12. Glue |
| 13. Square Yards | 14. Density | 15. Level loop |
| 16. Loop pile | 17. Pile | 18. Plush |
| 19. Power stretcher | 20. Ply | 21. Seam
sealing |
| 22. Serging | 23. Soil retardant | |

24. Tackless Strip
26. Twist
28. Woven

25. Tuft Bind
27. Underlay

Carpet a Small House

Answer Sheet for Match Exercise – Carpet

- A. 12
- B. 9
- C. 6
- D. 11
- E. 3
- F. 14
- G. 8
- H. 5
- I. 2
- J. 13
- K. 10
- L. 7
- M. 4
- N. 1
- O. 15
- P. 16
- Q. 17
- R. 18
- S. 19
- T. 20
- U. 21
- V. 22
- W. 23
- X. 24
- Y. 25
- Z. 26
- a. 27
- b. 28