

Name: \_\_\_\_\_

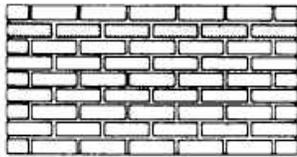
# How STRONG Is A Wall? (Teacher Handout)

## What's Your Style?

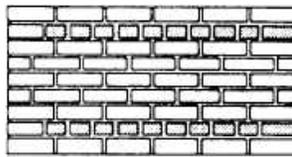
**Stonemasons** are stoneworkers who put together some very artsy and very strong walls!



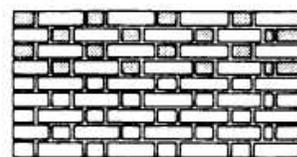
Look at some of the different mason styles below. Which style do you think is the strongest? Which do you think is the nicest-looking?



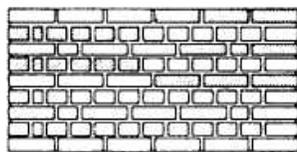
RUNNING



COMMON OR AMERICAN



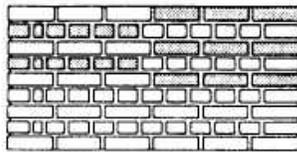
FLEMISH



ENGLISH



STACK



ENGLISH CROSS OR DUTCH

## Try It!

Using Lego™ pieces, try making samples of each of the types of walls above. Try twisting and applying forces to the walls to predict which will hold up best in our next test...



## Building Blocks: Bricks!

When building a wall, there are plenty of bricks to choose from.

Which of the six bricks on the right would you have chosen for your wall?

Which brick do you think would be the best in a cold climate? Which would be the best in a hot climate?

Which brick do you think would make the best wall to support a roof?



Name: \_\_\_\_\_

## A Strong Wall!

### Materials:

- Dominoes
- Clay
- Record Sheet (Pg. 253)



### Instructions:

1. Build a wall with the dominoes aligned one on top of the other. Use the clay as mortar to hold the dominoes together.
2. Test the strength and durability of the wall by lifting it in the middle.
3. Build another wall with the dominoes where alternate rows are aligned. Test this wall.
4. Try coming up with your own pattern and building it. Was it able to withstand the test?

### Talk About It!

1. Which wall held together better? Why do you think this is?  
*The alternating bricks tend to provide more friction to prevent instability.*
2. Where you surprised that some of the walls weren't as strong as you expected?

### Wall Hunt!

Walk around your school and look at the walls you see. Why do you think the builders chose that particular alignment?



### Test it!

1. Choose your strongest wall, bring it to the water tub and use a water can to see if it can withstand water.
  - a) Why do we do this test? *To see how the wall responds to the effect of rain.*
2. Twist your wall a bit to see how durable it is. Do you think it would be strong on uneven ground?
  - a) Why did we do this test? *To see how the wall responds to unstable terrain base (different soils, etc.) or other potential disturbances in the landscape (earthquakes, etc.)*
3. Device a test to see if your wall will buckle. *Perhaps have them build a narrow, tall wall in their design and push down on top, or place a book on it.*
  - a) Why did we do this test? *To see if the wall could safely support a roof structure.*

Name:

## **Image Sources:**

### **What's Your Style?**

1. Colourbox: <http://www.colourbox.com/image/construction-mason-worker-bricklayer-making-a-brickwork-with-trowel-and-cement-mortar-image-2664730>
2. Farm 4: [http://farm4.staticflickr.com/3487/3245182436\\_6a79a2ef04\\_b.jpg](http://farm4.staticflickr.com/3487/3245182436_6a79a2ef04_b.jpg)
3. PhotoBotanic: <http://photobotanic.photoshelter.com/image/I0000hwTSGN9vSrl>
4. Best Living Room Designs: <http://www.bestlivingroomdesigns.com/living-room-designs/I0-exposed-stone-fireplace-designs-for-cozy-living-room/>
5. Construction Manuals: [http://constructionmanuals.tpub.com/I4043/css/I4043\\_234.htm](http://constructionmanuals.tpub.com/I4043/css/I4043_234.htm)

### **Try It!**

1. I23RF: [http://www.I23rf.com/photo\\_7065334\\_toy-brick-wall-in-different-colours.html](http://www.I23rf.com/photo_7065334_toy-brick-wall-in-different-colours.html)

### **Building Blocks: Bricks!**

1. Indiamart: <http://www.indiamart.com/hh-cement/products.html>

### **A Strong Wall:**

1. Giant Bomb: <http://www.giantbomb.com/domino/3055-2706/games/>
2. George Weil: [http://www.georgeweil.com/fact\\_file/polymer-clay-hearts-card.aspx](http://www.georgeweil.com/fact_file/polymer-clay-hearts-card.aspx)

### **Dreams Time:**

1. <http://www.dreamstime.com/stock-photo-school-image13517520>