

# Materials List

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## Printed Materials

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Can be downloaded at [www.physicscentral.com/physicsquest](http://www.physicscentral.com/physicsquest)

PhysicsQuest Manual

Ben's Letter

About Magic Squares

Final Report

## Hardware

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The quantities listed here are enough for one group to do each activity at a time.

### Activity 1: Opposites Attract

- Piece of wool, approximately 10-cm x 10-cm or larger. *You can purchase wool by the yard at most fabric stores.*
- Plastic comb (at least 5")
- Masking tape
- Meter stick (wood or plastic). *The end of a wood or plastic table will also work.*
- Metric ruler
- Scotch tape
- Scrap paper

### Activity 2: Traveling Charges

- Miniature light bulb (around 3.5v). *These are available from science supply stores such as Science Kit & Boreal Labs, <http://sciencekit.com>, part number WW6221004. \$15.50/pack of 10.*
- Miniature light bulb holder. *These are available from science supply stores such as Science Kit & Boreal Labs, <http://sciencekit.com>, part number WW6004100. \$15.95/pack of 12.*
- Insulated wires with alligator clips (2). *Called "Insulated Test / Jumper Leads", you can usually find a pack of 10 for less than \$6. If not available at a local hardware store or RadioShack, you can purchase them from [www.radioshack.com](http://www.radioshack.com), model 278-1156. The clips are not necessary, but do make things easier.*
- D batteries (2)
- Paper clips (3)
- Scotch tape
- String
- Penny
- Nickel

## Hardware

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### Activity 3: Soak up the Sun

- Felt (4 colors)
- Thermometers (2).  
*“Metal Back Student thermometers” such as those included in the kit range from 20 to 230°F/−30 to 110°C and are available at science supply stores such as Science Kit & Boreal Labs, <http://sciencekit.com>, part number WW6644400. Around \$3.50 each.*
- Desk lamp with 60W or higher light bulb
- Stop watch or clock with second hand
- Graph paper
- Plain white paper
- Scissors
- Masking tape
- Metric ruler
- Colored pencils / markers

### Activity 4: Bring it into Focus

- Double convex lens,  $f = 20\text{-cm}$ .  
*These are available at science supply stores such as Science Kit & Boreal Labs, <http://sciencekit.com>, part number WW6224520. \$3.95 each. Many places also offer classroom set specials.*
- Double convex lens,  $f = 10\text{-cm}$ .  
*These are available at science supply stores such as Science Kit & Boreal Labs, <http://sciencekit.com>, part number WW6224510. \$3.95 each. Many places also offer classroom set specials.*
- Double concave lens,  $f = 5\text{-cm}$ .  
*These are available at science supply stores such as Science Kit & Boreal Labs, <http://sciencekit.com>, part number WW6223505. \$3.75 each. Many places also offer classroom set specials.*
- Meter stick
- White paper