

**Mission:** Raven Hill provides a place that enhances hands-on and lifelong learning for all ages by connecting science, history & the arts.

## Home Learning Opportunities: Week 9

### May 22, 2020—Activity #9.5: Sundial

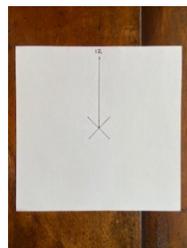
Telling time on a sundial is easy and fun. You will need a sunny day, of course, but you can make your sundial ahead of time and mark it, whenever there is sun! You will need a compass for finding north (there's usually one on a smart phone), paper, pencil, scissors, ruler and tape. Cut out a six inch square. Place the ruler on the diagonals—opposite corners—and close to the middle draw a little line along the ruler. Place the ruler on the other diagonal, draw another pencil line near the center and where the two pencil lines cross, is the center of the piece of paper. On one edge of the paper, measure 3 inches or the middle of the edge or side of the paper. Draw a line from the center of the paper to the 3-inch mark. Label that line with a 12 near the edge of the paper. That line will be “north” and that is the line that your pointer or style or gnomon will follow. The style or gnomon creates the shadow. Your gnomon or style needs to be a 45-degree angle. 45 degrees is half of a 90-degree or right angle, so you can fold a 3-inch square piece of paper over at a corner and easily get a 45-degree angle for your gnomon. Cut it down, so it is only about an inch long to keep your shadow short. Once you have the triangle folded, cut a curve along one side of the triangle shape, so your style makes a sharp shadow. Leave the triangle folded, so it's a double layer. Tape this piece along the north line that you drew with the 45-degree angle at the middle mark on your paper. Tape on both sides of the gnomon to secure it firmly. Write 12pm at the edge of the paper by the vertical line. To mark the rest of the numbers or times, place your sundial outside with 12pm and the gnomon pointing to the north, which you will need to find using a compass. Your sundial must always point north. At 7am, mark where the shadow line falls as 7am. At 8am, mark where the shadow line falls as 8am. Set a timer and mark all the hours in the morning and afternoon. If the sun disappears, finish the sundial next time it is sunny. Your sundial is now ready to tell the time from the shadows after that! No need for a watch, as long as the sun is shining! Attached is a photo of a finished sundial. Remember that noon or 12 pm must always point north, when reading your sundial!



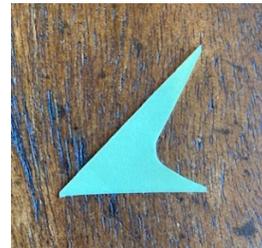
1 Supplies



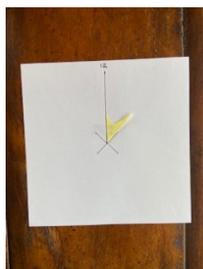
2 Mark center



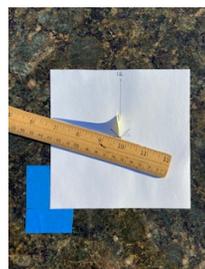
3 North line



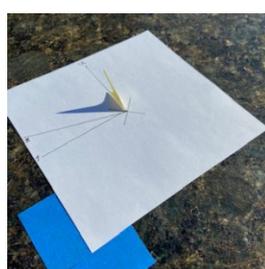
4 Cut gnomon at 45°



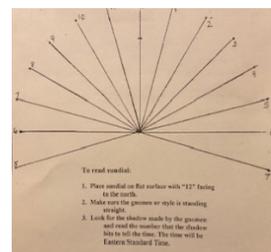
5 Attach gnomon



6 Mark shadow



7 Shadow at 9am



8 Finished sundial