Canvas Tasks:

Beginning

Geometry Task: Draw a rectangle.
Draw a rectangle using *fillRect*, then draw the outline of the rectangle using the *beginPath, moveTo, lineTo, closePath, context.stroke* sequence.
Questions: What are the properties of rectangles? How can you draw a right angle in the canvas?

Geometry Task: Draw a house.
Questions: How did you figure out what size to make the shapes? How did you figure out the placement of each shape?

Geometry Task: Draw a face.
Questions: How did you figure out what size to make the shapes? How did you figure out the placement of each shape?

Illusion Task: “Which red line is longer?”
Questions: Does the black shape matter? Does it have to be a parallelogram? What happens if you make it a rectangle? trapezoid? Does the illusion still work?

Illusion Task: “White’s Illusion.”
Questions: What is the minimum distance the gray rectangles should be apart? is there a maximum?

Geometry Task: Circumcenter
Draw a scalene triangle and its circumscribed circle.
Questions: How did you figure out where the center of the circle would go? What about the radius?

Illusion Task: “Is the red shape a square?”
Question: How far apart should the radii of the concentric circles be?

Illusion Task: “Is the red shape a circle?”
Questions: What is the minimum degrees in between each spoke? Maximum?

Geometry Task: Animate a robot.
Question: What algebra concepts did you use when you made the robot move?

Geometry Task: Animate a rotating square.
Question: What is the radius of a circle that circumscribes the square?

Geometry Task: Rolling Wheel

Animate the rotating wagon wheel to move across the canvas.
Question: How far does it move each time as it rotates to mimic a real wheel?

Advanced
Geometry Task: Incenter
Draw a scalene triangle, then place a circle inside of it so that each side of the triangle is tangent to the circle at exactly one point.
Question: How did you figure out where the center of the circle would go? What about the radius?

Geometry Task: Scaling area
Draw a 1x2 rectangle, then animate it to double in size each cycle until it fills the whole 1000x2000 canvas.
Questions: How long will it take to fill the canvas? what if it triples every cycle? quadruples? n?

Illusion Task: “The Hermann Grid Illusion.”
Question: How did you find the center for each circle?

Illusion Task: “The Hering Illusion.”
Question: How did you figure out the slopes of the lines?

Illusion Task: “Lilac chaser.”
Question: How did you figure out how fast to make the animation? Would more circles work better? less?

Illusion Task: “Motion Induced Blindness.”
Questions: Is the six by six grid ideal for this illusion? What if it were eight by eight? three by three?

Physics Task: Equal size balls
Question: How did you account for conservation of momentum?

Physics Task: Unequal size balls
Question: How did you calculate the bounce angles?

Events Task: Falling Boxes (no physics)

Events Task: Falling Boxes (with physics)