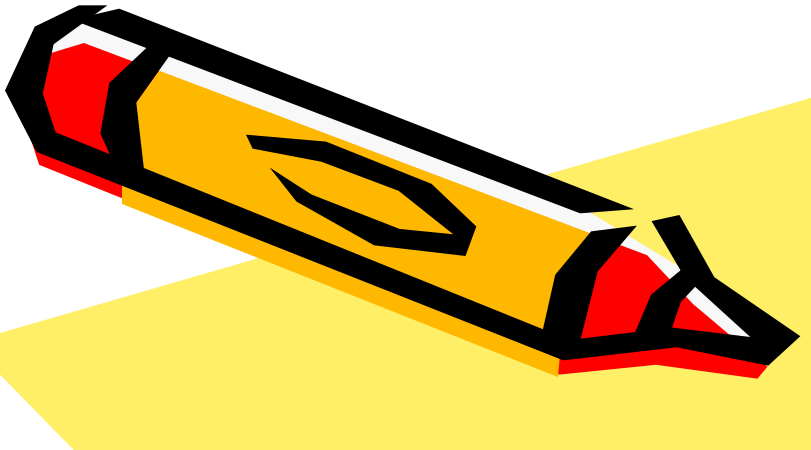
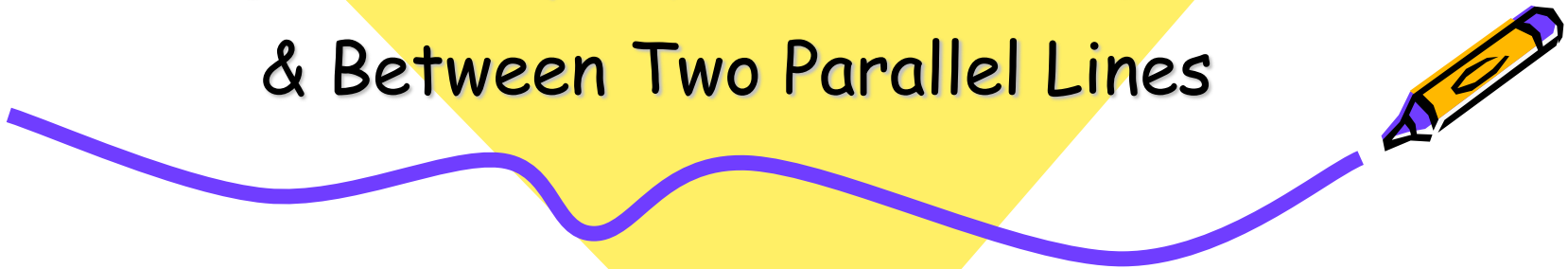
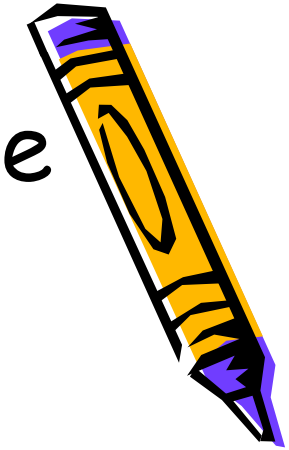


Geometry

Distance from a Point to a Line & Between Two Parallel Lines



Distance from a point to a line



1. Determine the slope of the given line.

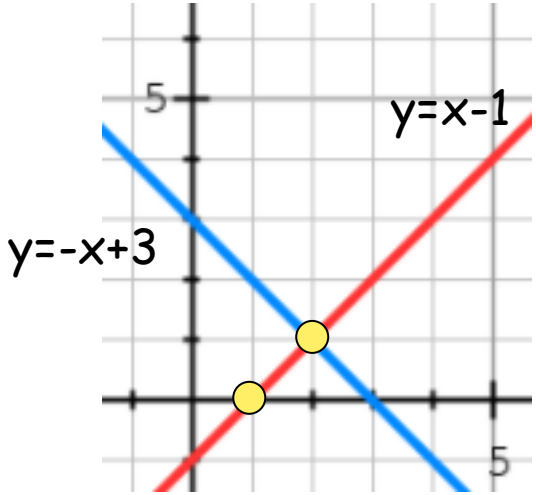
2. Write the equation of the line perpendicular to the given line, that passes through the given point.

3. Solve the system of equations for the two lines (the given line & the one we just wrote)

4. Use the distance formula to find the distance between the original point given and the point found in step 3.

Distance from a point to a line

Find the distance from the point (1, 0) to the line y = -x+3



1. m = -1
2. y = x – 1 (plug in x, y, and m to find b; then rewrite equation)
3. solve the system of equations:
   y = -x+3 and y = x-1
   getting the point (2, 1)
4. Distance between (1, 0) and (2, 1):
   1.4

Distance from a point to a line

Find the distance from the point (-9, -3) to the line y = x - 6

Find the distance from the point (15, -21) to the line 5x + 2y = 4

Distance between two parallel lines

1. Determine the slope of a given line.

2. Find a point the first line by picking a value for x and plugging it in to get y

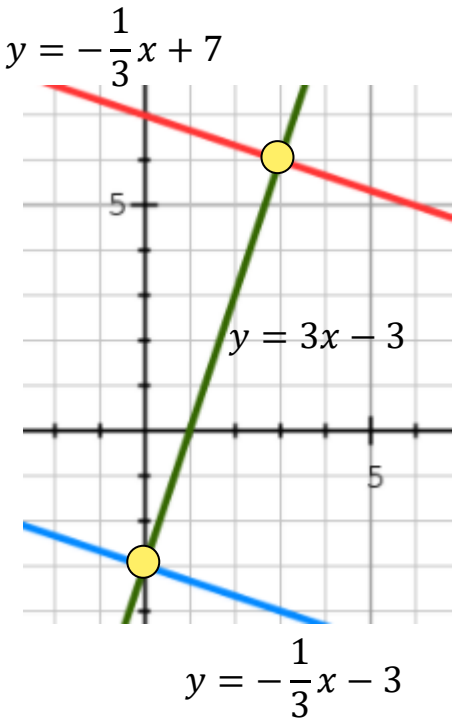
3. Write the equation of the line perpendicular to the first line, that passes through the point you just found.

4. Solve the system of equations: the second of parallel lines and the equation you just wrote

5. Use the distance formula to find the distance between the original point given and the point found in step 3.

Distance between two parallel lines

Find the distance between the lines $y = -\frac{1}{3}x - 3$ *and* $y = -\frac{1}{3}x + 7$



1. m = $-\frac{1}{3}$
2. Plug in x=0 to find a point on the first line: (0, -3)
3. y = 3x - 3
4. solve the system of equations:
   $y = -\frac{1}{3}x + 7$ *and* $y = 3x - 3$
   getting the point (3, 6)
5. Distance between (0, -3) and (3, 6): 9.5

Distance between two parallel lines

Find the distance between $y = x - 2$ and $y = x + 6$