Name Key

Partitioning Line Segments

1. Given the points A(–1, 2) and B(7, 14), find the coordinates of the point P on directed line segment $\overline{AB}$ that partitions $\overline{AB}$ in the ratio 1:3.

$\left(-1+\frac{1}{1+3}(7--1), 2+\frac{1}{1+3}(14-2)\right)$

$\boxed{(1,5)}$

2. Given the points A(-2, 4) and B(7, -2), find the coordinates of the point P on directed line segment $\overline{AB}$ that partitions $\overline{AB}$ in the ratio 1:2.

$\left(-2+\frac{1}{1+2}(7--2), \left(4+\frac{1}{1+2}(-2-4)\right)\right)$

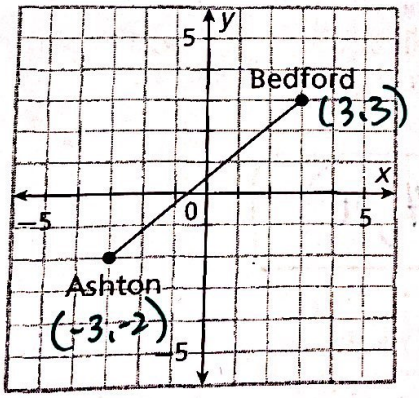
$\boxed{(1,2)}$

3. Given the points A(-3, -4) and B(5, 0), find the coordinates of the point P on directed line segment $\overline{AB}$ that partitions $\overline{AB}$ in the ratio 2:3.

$\left(-3+\frac{2}{2+3}(5--3), -4+\frac{2}{2+3}(0--4)\right)$

$\boxed{\left(\frac{1}{5}, \frac{-12}{5}\right)}$

4. The map shows a straight highway between two towns. Highway planners want to build two new rest stops between the towns so that the two rest stops divided the highway into three equal parts. Find the coordinates of the points at which the rest stops should be built.



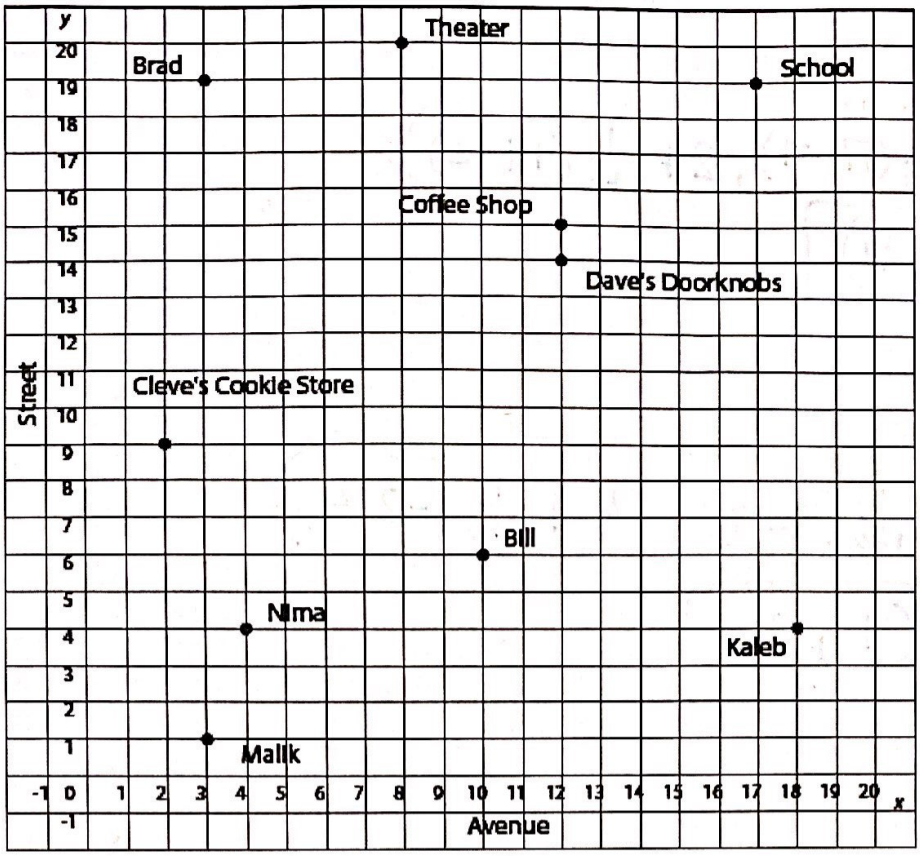
$\left(-3+\frac{1}{1+2}(3--3), -2+\frac{1}{1+2}(3--2)\right)$

$\boxed{\left(-1, -\frac{1}{3}\right)}$

$\left(-3+\frac{2}{2+1}(3--3), -2+\frac{2}{2+1}(3--2)\right)$

$\boxed{\left(1, \frac{4}{3}\right)}$

Use the map and the information given to solve each problem that follows.



5. Nima lives at the corner of 4th Avenue and 4th Street. Bill lives at the corner of 10th Avenue and 6th Street. Their favorite bakery is located midway between them. What is one possible of the bakery?

(4,4) (10,6)

(7,5)

6. Cleve's Cookie Store is located at the corner of 2nd Avenue and 9th Street. Dave's Doorknobs is located at the corner of 12th Avenue and 14th Street. Located 1/5 of the distance from Cleve's Cookie Store is the post office. Where is the post office?

(2,9) (12,14)

$(2 + \frac{1}{5}(12-2), 9 + \frac{1}{5}(14-9))$ **(4,10)**

7. Malik and Brad both live on 3rd Avenue. Malik lives at the corner of 1st Street, and Brad lives at the corner of 19th Street. 2/3 the distance from Malik's apartment to Brad's apartment is a market. Where is the market?

(3,1) (3,19)

$(3 + \frac{2}{3}(3-3), 1 + \frac{2}{3}(19-1))$ **(3,13)**