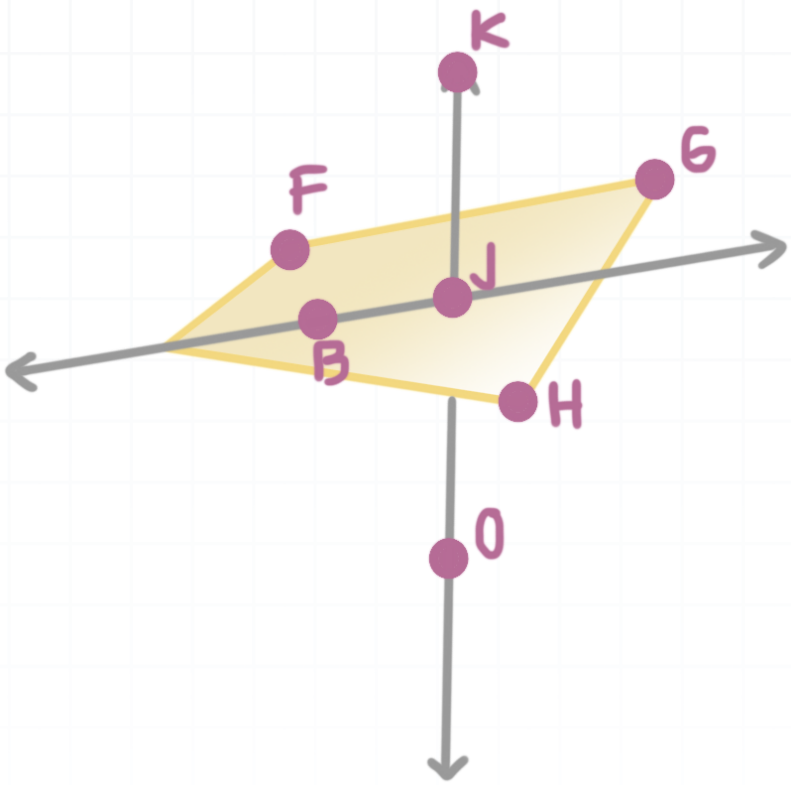
Geometry Workbook

Lines

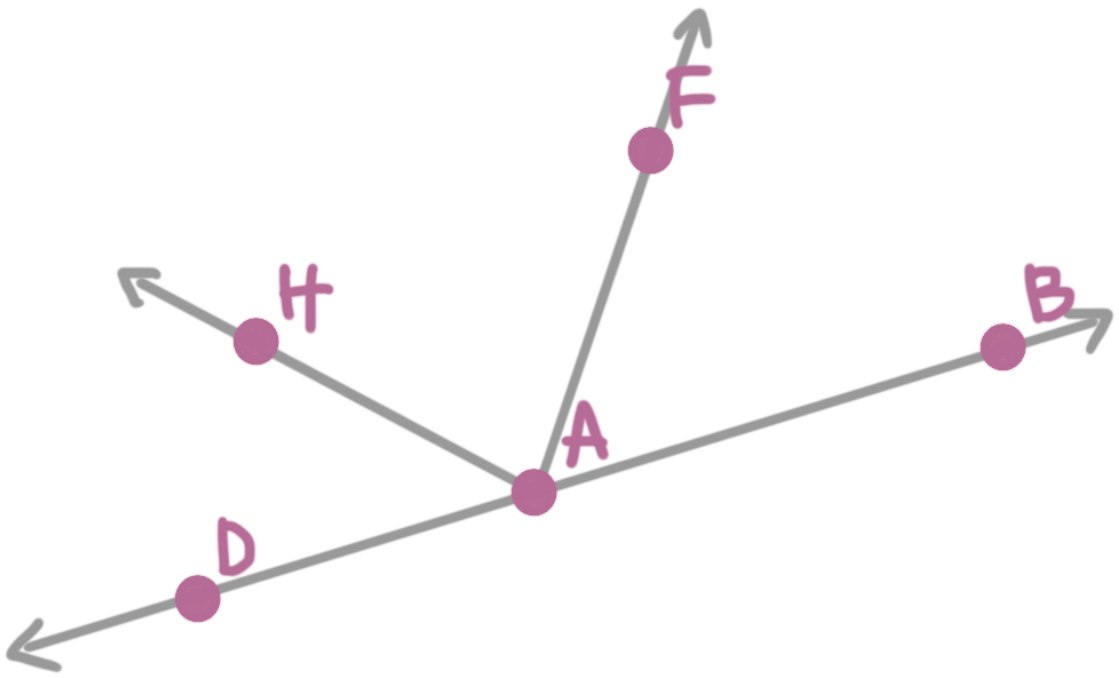
krista king
MATH

NAMING SIMPLE GEOMETRIC FIGURES

1. Name the intersection of $\overline{BJ}$ and $\overline{KO}$.



2. Name the angle that forms a linear pair with $\angle DAF$.



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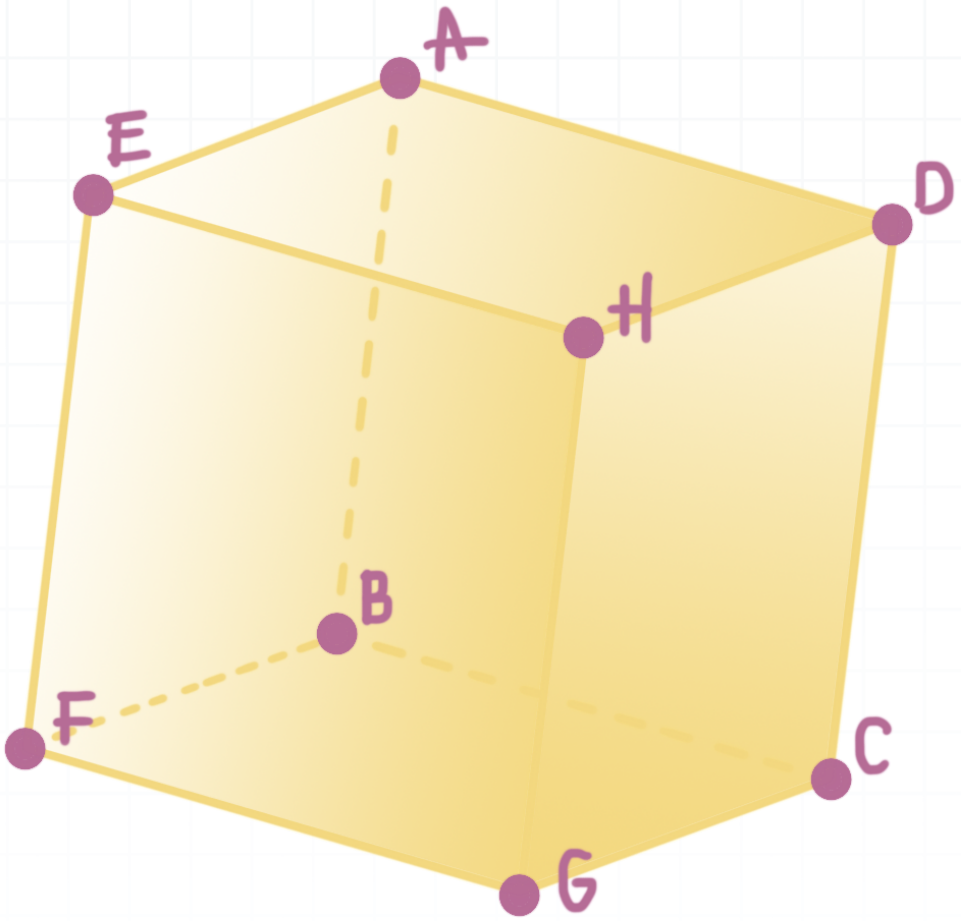
3. Name three non-collinear points.



4. Name a pair of vertical angles.

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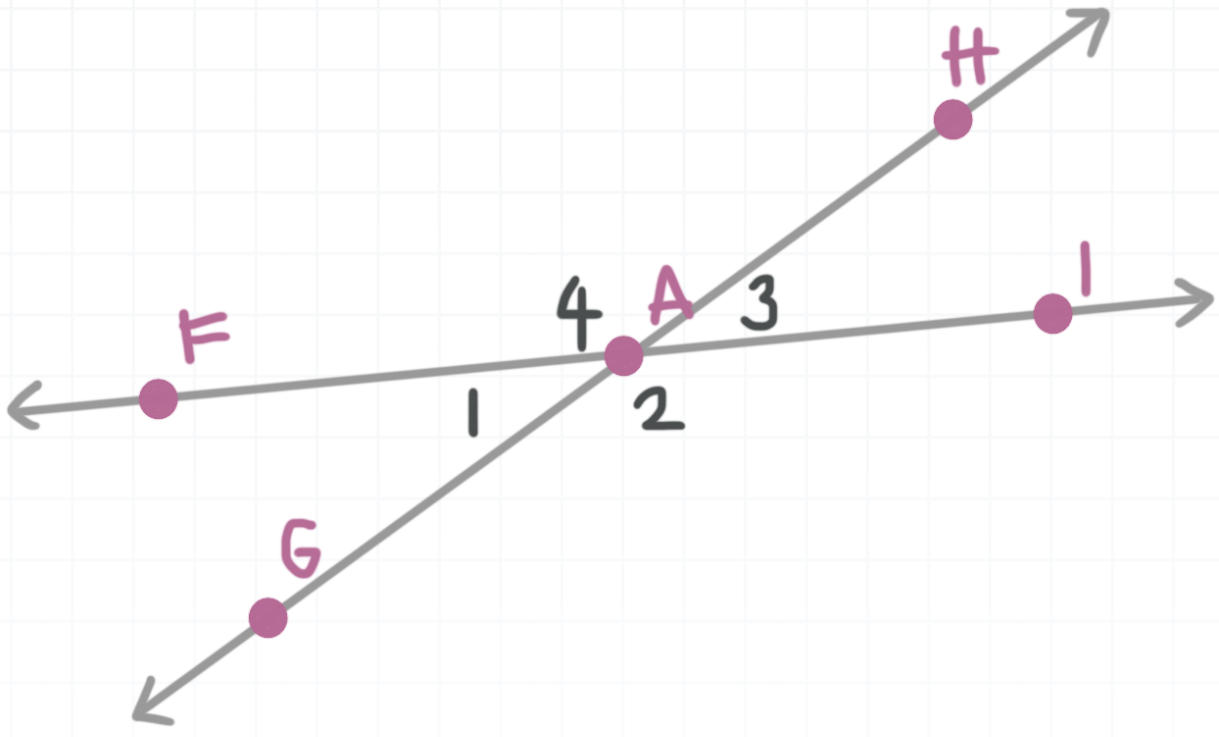

■ 5. $\overline{XY}$ is an angle bisector of $\angle WXZ$. Write the congruence statement that follows.

■ 6. Name the intersection of plane AEH and plane GCD.

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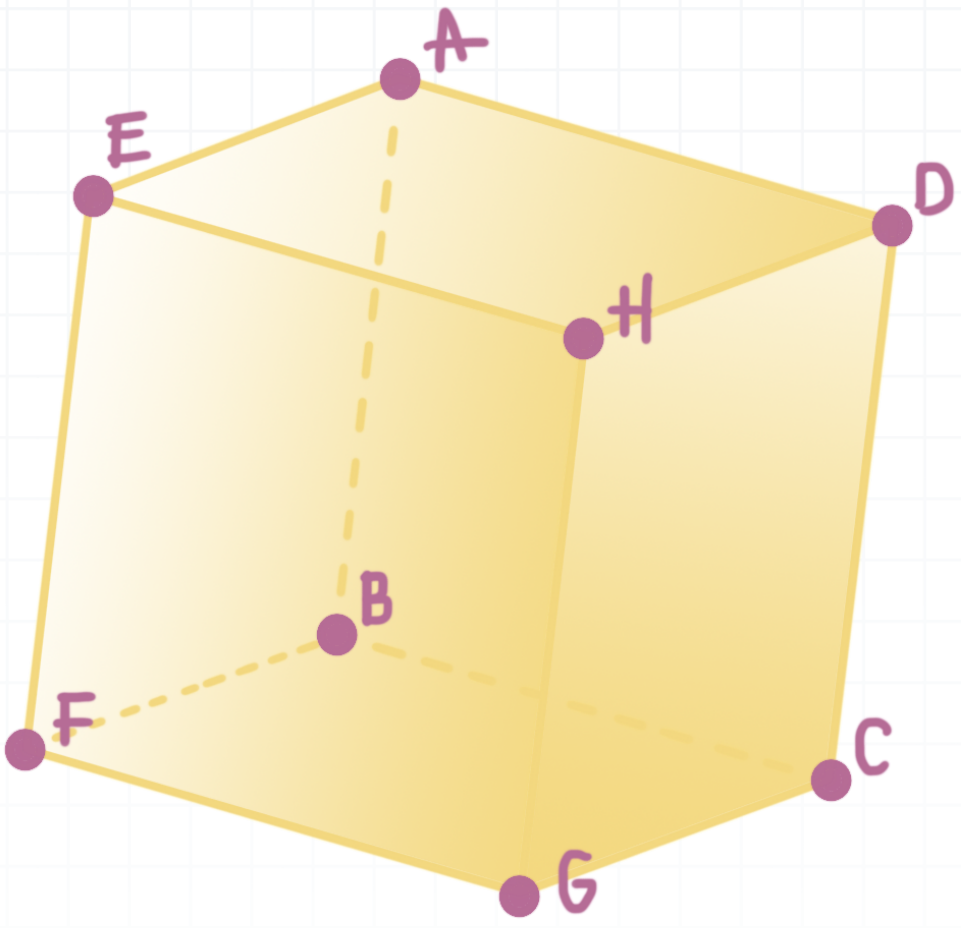

■ 7. $\overline{AB} \perp \overline{CD}$ and they intersect at E. Draw a sketch of this and include all necessary labels on your diagram.

■ 8. Sketch the following: $\overline{AB}$ lies on plane DEF and C is contained in $\overline{AB}$.

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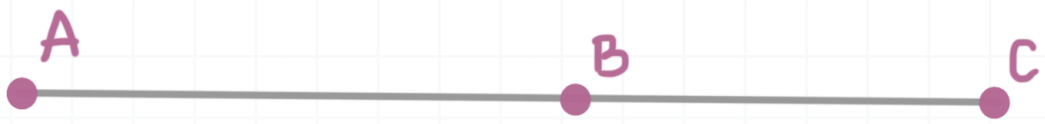
LENGTH OF A LINE SEGMENT

1. In the line segment, $AB = 14$ and $BC = 10$. Find AC.



2. R lies between S and T. $ST = 30$ and $SR = 17$. Find RT.

3. $JM = 2MP$ and $JP = 30$. Find JM and MP.

4. B lies between L and N. $LB = x$, $BN = 2x + 5$, and $LN = 17$. Write an equation that can be used to find the value of x. Then find x.

5. $\overline{AB}$ bisects $\overline{DC}$ at E. $DC = 8$ cm, $AB = 10$ cm, and $AE = 4$ cm. Find DE and EB.

6. P lies between M and O. $MP = 3x - 4$, $PO = 2x + 2$, and $MO = 3x + 12$. Find x and MO.

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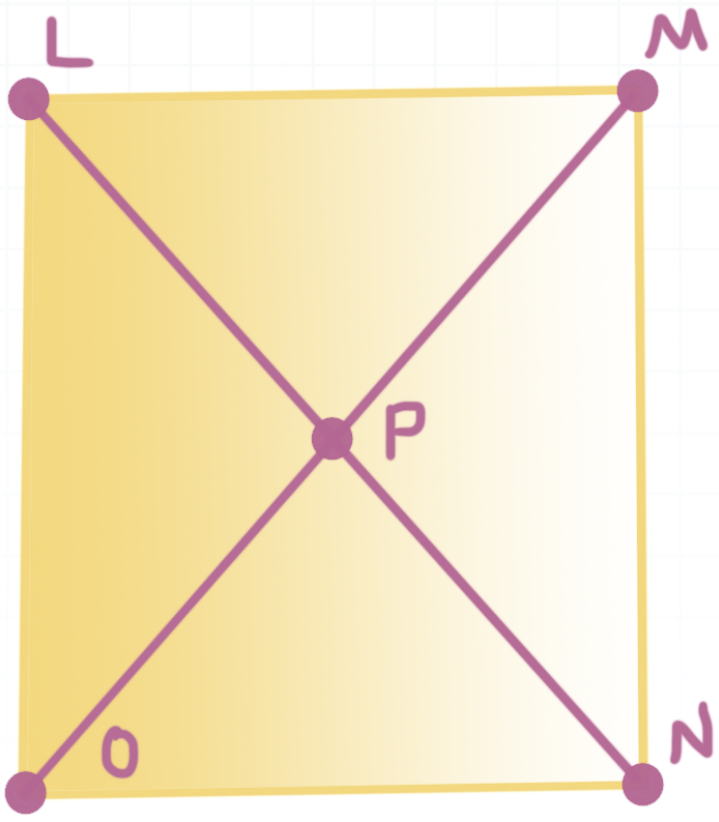
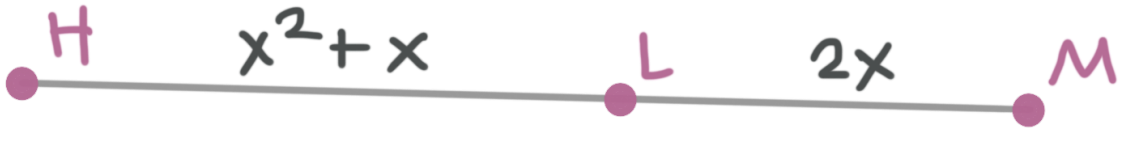
■ 7. The diagonals of a square bisect each other and are also congruent. The diagram below show diagonals $\overline{LN}$ and $\overline{MO}$ intersecting at P. Because they are bisectors, P is the midpoint of each segment. If $LP = 4.5$ inches, find MO.



■ 8. $HM = 10$. Use the diagram to find x and HL.



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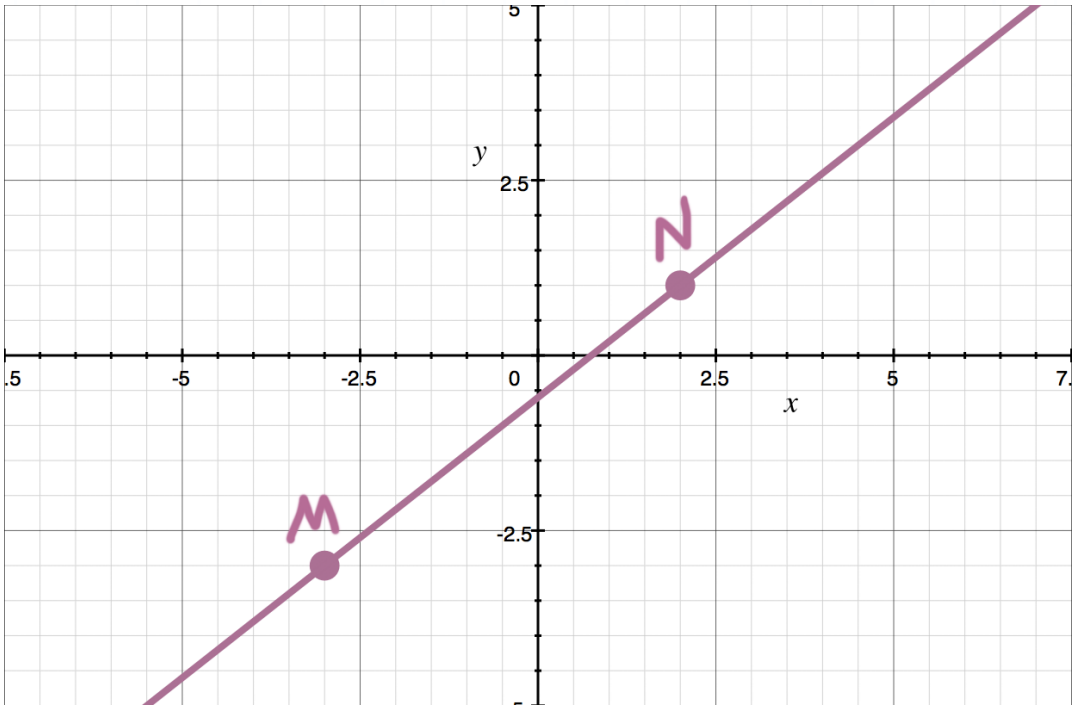
SLOPE AND MIDPOINT OF A LINE SEGMENT

- 1. Find the length of $\overline{AB}$ given $A(-2,3)$ and $B(4,3)$.

- 2. Find the length of $\overline{EF}$ given $E(-3,-2)$ and $F(1,1)$.

- 3. Find the length of $\overline{JK}$ given $J(0,6)$ and $K(2,-4)$.

- 4. Find the slope of line MN.



- 5. Find the slope of the line passing through $S(-6,6)$ and $T(2,-4)$.

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- 6. J is the midpoint of $\overline{RF}$. Find the coordinates of J if $R(-4,6)$ and $F(0,-2)$.

- 7. P is the midpoint of $\overline{XY}$. Find the coordinates of X if $P(-3,6)$ and $Y(0,2)$.

- 8. E is a midpoint of $\overline{LM}$. $LE = 2x + 3$ and $LM = 6x - 4$. Find x and LM.

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PARALLEL, PERPENDICULAR, OR NEITHER

■ 1. $\overline{AB} \perp \overline{CD}$. The slope of $\overline{AB}$ is $2/3$. Find the slope of $\overline{CD}$.

■ 2. $\overline{MN} \parallel \overline{ST}$, and the slope of $\overline{MN}$ is -2. Find the slope of $\overline{ST}$.

■ 3. Are $\overline{XY}$ and $\overline{AB}$ parallel, perpendicular, or neither? $X(4,-3)$, $Y(-2,1)$, $A(1,3)$, and $B(3,6)$. Use the slopes of the lines to justify your answer.

■ 4. Are $\overline{EF}$ and $\overline{GH}$ parallel, perpendicular, or neither? $E(-1,4)$, $F(0,2)$, $G(-1,0)$, and $H(1,4)$. Use the slope of the lines to justify your answer.

■ 5. Write the equation of a line in slope-intercept form that's perpendicular to the given line and passes through $(2,3)$.

$$y = \frac{1}{2}x + 2$$

■ 6. Write the equation of a line parallel to $y = 3x - 2$ that passes through $(0,3)$.

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■ 7. A square has opposite sides parallel and consecutive sides perpendicular and all sides are congruent. Quadrilateral $SQRE$ has coordinates $S(0,3)$, $Q(4,0)$, $R(1,-4)$, and $E(-3,-1)$. Determine whether or not $SQRE$ is a square by showing that the opposite sides are parallel and consecutive sides are perpendicular and that all sides are congruent.

■ 8. A square has opposite sides parallel and consecutive sides perpendicular and all sides are congruent. Quadrilateral $SQRE$ has coordinates $S(0,3)$, $Q(4,0)$, $R(1,-4)$, and $E(-3,-1)$. Determine if the diagonals of the square are perpendicular. Determine if the diagonals are congruent.

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DISTANCE BETWEEN TWO POINTS IN TWO DIMENSIONS

- 1. Find the length of $\overline{GH}$ given $G(-2,1)$ and $H(4,1)$.

- 2. Find the length of $\overline{XY}$ given $X(-4,1)$ and $Y(0,2)$.

- 3. Find the perimeter of $\triangle EFG$ if $E(1,1)$, $F(1,6)$, and $G(5,4)$.

- 4. Find the area of square $ABCD$ given $A(-8,0)$, $B(0,6)$, $C(6,-2)$, and $D(-2,-8)$.

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DISTANCE BETWEEN TWO POINTS IN THREE DIMENSIONS

- 1. Find the distance between points with coordinates $(3,8,0)$ and $(3,8,6)$.

- 2. Find the distance between points with coordinates $(2,5,-3)$ and $(2,8,1)$.

- 3. Find the distance between points with coordinates $(1,1,1)$ and $(5,5,5)$.

- 4. Find the distance between points with coordinates $(9,6,3)$ and $(-9,-6,-3)$.

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MIDPOINT OF A LINE SEGMENT IN THREE DIMENSIONS

- 1. Find the midpoint between points with coordinates $(3,8,0)$ and $(3,8,6)$.

- 2. Find the midpoint between points with coordinates $(2,5,-3)$ and $(2,8,1)$.

- 3. Find the midpoint between points with coordinates $(1,1,1)$ and $(5,5,5)$.

- 4. Find the midpoint between points with coordinates $(9,6,3)$ and $(-9,-6,-3)$.

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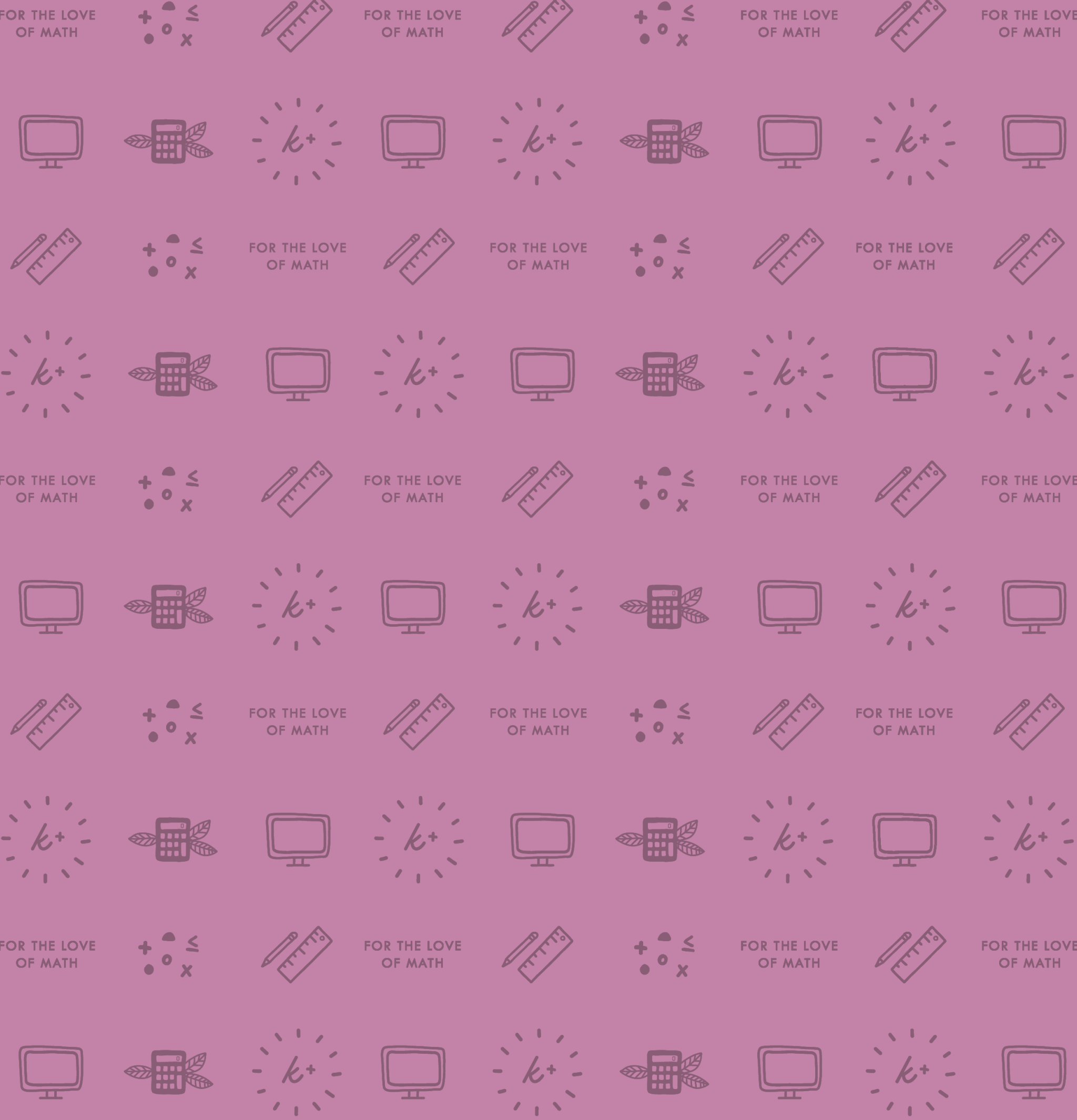

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