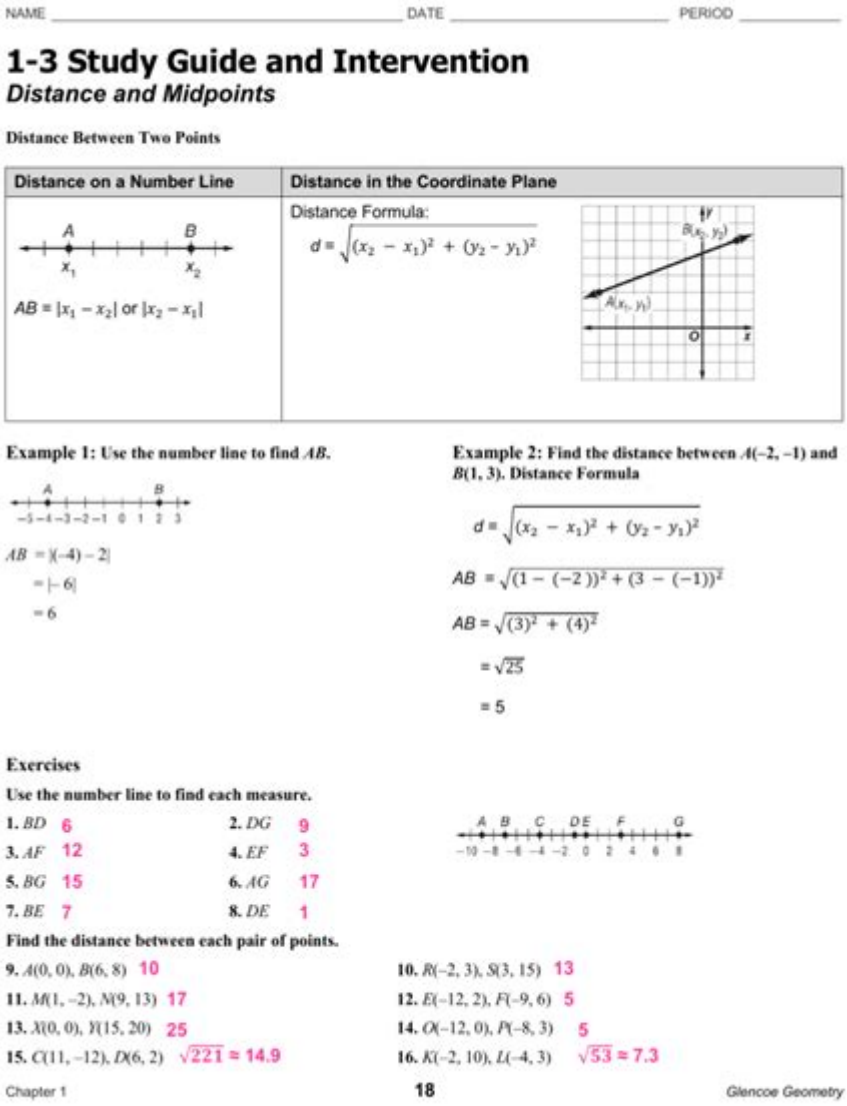
1 3 Practice Distance And Midpoints Answer Key



NAME _____ DATE _____ PERIOD _____

1-3 Study Guide and Intervention

Distance and Midpoints

Distance Between Two Points

Distance on a Number Line	Distance in the Coordinate Plane
A, B, x_1, x_2 $AB = \lvert x_1 - x_2 \rvert$ or $\lvert x_2 - x_1 \rvert$	Distance Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Example 1: Use the number line to find AB.

$AB = \lvert(-4) - 2\rvert$

$= \lvert -6 \rvert$

$= 6$

Example 2: Find the distance between $A(-2, -1)$ and $B(1, 3)$. Distance Formula

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$AB = \sqrt{(1 - (-2))^2 + (3 - (-1))^2}$

$AB = \sqrt{(3)^2 + (4)^2}$

$= \sqrt{25}$

$= 5$

Exercises

Use the number line to find each measure.

A B C D E F G

1. BD 6 **2.** DG 9

3. AF 12 **4.** EF 3

5. BG 15 **6.** AG 17

7. BE 7 **8.** DE 1

Find the distance between each pair of points.

9. $A(0, 0)$, $B(6, 8)$ 10

10. $R(-2, 3)$, $S(3, 15)$ 13

11. $M(1, -2)$, $N(9, 13)$ 17

12. $E(-12, 2)$, $F(-9, 6)$ 5

13. $X(0, 0)$, $Y(15, 20)$ 25

14. $O(-12, 0)$, $P(-8, 3)$ 5

15. $C(11, -12)$, $D(6, 2)$ $\sqrt{221} \approx 14.9$

16. $K(-2, 10)$, $L(-4, 3)$ $\sqrt{53} \approx 7.3$

Chapter 1 18 Glencoe Geometry

1 3 practice distance and midpoints answer key is an essential resource for students and educators alike, particularly in the realm of geometry and algebra. Understanding how to calculate distances between two points and finding the midpoints is crucial for developing spatial reasoning and problem-solving skills. This article will delve into the concepts of distance and midpoints, provide step-by-step explanations of the formulas used, and offer a comprehensive answer key for practice problems associated with these topics.

Understanding Distance and Midpoints

When working with coordinates on a Cartesian plane, two fundamental concepts arise:

distance and midpoint. These concepts are pivotal in various applications, including physics, engineering, and computer graphics.

Distance Formula

The distance between two points in a two-dimensional space can be calculated using the Distance Formula. If we have two points, $A(x_1, y_1)$ and $B(x_2, y_2)$, the distance d between them is given by:

$$
d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
$$

This formula is derived from the Pythagorean theorem, which states that in a right triangle, the square of the hypotenuse (the distance in this case) is equal to the sum of the squares of the other two sides.

Midpoint Formula

The midpoint of a line segment is the point that divides the segment into two equal lengths. To find the midpoint M between points $A(x_1, y_1)$ and $B(x_2, y_2)$, we use the Midpoint Formula:

$$
M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)
$$

This formula averages the x-coordinates and the y-coordinates of the two points to find the coordinates of the midpoint.

Practice Problems

To consolidate understanding of these concepts, it's beneficial to practice solving problems involving both distance and midpoints. Here are some example problems along with their solutions.

Examples of Distance Problems

1. Problem 1: Find the distance between the points $(3, 4)$ and $(7, 1)$.

Solution:
- Using the distance formula:
$$

$$
d = \sqrt{(7 - 3)^2 + (1 - 4)^2} = \sqrt{(4)^2 + (-3)^2} = \sqrt{16 + 9} = \sqrt{25} = 5
$$
The distance is 5 units.

2. Problem 2: Calculate the distance between the points $(-2, -3)$ and $(2, 4)$.

Solution:
- Using the distance formula:
$$
d = \sqrt{(2 - (-2))^2 + (4 - (-3))^2} = \sqrt{(4)^2 + (7)^2} = \sqrt{16 + 49} = \sqrt{65}
$$
The distance is $\sqrt{65}$ units or approximately 8.06 units.

Examples of Midpoint Problems

1. Problem 3: Determine the midpoint of the segment connecting $(1, 2)$ and $(5, 6)$.

Solution:
- Using the midpoint formula:
$$
M = \left(\frac{1 + 5}{2}, \frac{2 + 6}{2}\right) = \left(\frac{6}{2}, \frac{8}{2}\right) = (3, 4)
$$
The midpoint is $(3, 4)$.

2. Problem 4: Find the midpoint of the segment connecting $(-3, -2)$ and $(3, 4)$.

Solution:
- Using the midpoint formula:
$$
M = \left(\frac{-3 + 3}{2}, \frac{-2 + 4}{2}\right) = \left(\frac{0}{2}, \frac{2}{2}\right) = (0, 1)
$$
The midpoint is $(0, 1)$.

1 3 Practice: Answer Key

Here is the answer key for a set of practice problems often encountered in a 1 3 math curriculum, focusing on distance and midpoints.

Distance Problems

1. Distance between (3, 2) and (6, 5):
- Answer: $\sqrt{18}$ or approximately 4.24 units.

2. Distance between (-1, -1) and (4, 4):
- Answer: $5\sqrt{2}$ or approximately 7.07 units.

3. Distance between (0, 0) and (10, 10):
- Answer: $10\sqrt{2}$ or approximately 14.14 units.

4. Distance between (2, 2) and (2, -3):
- Answer: 5 units.

Midpoint Problems

1. Midpoint between (2, 3) and (4, 7):
- Answer: $(3, 5)$.

2. Midpoint between (-4, 0) and (0, 6):
- Answer: $(-2, 3)$.

3. Midpoint between (1, -1) and (7, 3):
- Answer: $(4, 1)$.

4. Midpoint between (-5, -5) and (-3, -1):
- Answer: $(-4, -3)$.

Applications of Distance and Midpoints

The concepts of distance and midpoints extend beyond classroom exercises. They have practical applications in various fields:

1. Navigation: Distance calculations are essential in GPS technology, where determining the shortest path between two points is crucial.

2. Architecture and Engineering: Midpoints are used in design and construction for symmetry and balance in structures.

3. Computer Graphics: Understanding distances allows for the rendering of images and animations, where object placement and movement are necessary.

4. Robotics: In robotics, calculating the distance to objects and determining midpoints can help in navigation and manipulation tasks.

Conclusion

The 1 3 practice distance and midpoints answer key serves as a valuable tool for reinforcing the understanding of these critical concepts in geometry. By becoming proficient in using the distance and midpoint formulas, students can enhance their

mathematical skills and apply them in real-world scenarios. Regular practice, coupled with a solid grasp of the underlying principles, will prepare students for more advanced topics in mathematics and related fields.

Frequently Asked Questions

What is the formula for finding the distance between two points in a coordinate plane?

The distance formula is $d = \sqrt{((x2 - x1)^2 + (y2 - y1)^2)}$ where (x1, y1) and (x2, y2) are the coordinates of the two points.

How do you calculate the midpoint between two points?

The midpoint M between two points (x1, y1) and (x2, y2) is calculated using the formula $M = ((x1 + x2)/2, (y1 + y2)/2)$.

In a distance and midpoints practice problem, what is typically asked?

Students are usually asked to calculate the distance between two points or to find the midpoint of a segment defined by two endpoints.

Can the distance formula be applied in three-dimensional space?

Yes, the distance formula can be extended to three dimensions using $d = \sqrt{((x2 - x1)^2 + (y2 - y1)^2 + (z2 - z1)^2)}$.

What is the significance of finding midpoints in geometry?

Finding midpoints is significant for bisecting segments, determining coordinates of geometric figures, and solving problems involving symmetry.

What is an example of a practical application of distance and midpoints in real life?

Distance and midpoints can be used in navigation to find the shortest route between two locations or to determine the best meeting point between two parties.

How can technology aid in solving distance and midpoint problems?

Graphing calculators and software tools can quickly compute distances and midpoints, visualize points, and help verify results through graphical methods.

1 3 Practice Distance And Midpoints Answer Key

知乎 - 知乎

有问题，上知乎。知乎，可信赖的问答社区，以让每个人高效获得可信赖的解答为使命。知乎凭借认真、专业和友善的社区氛围，结构化、易获得的优质内容，基于问答的内容生产方式和独特的社区机制，吸引、聚集了各行各业中大量的亲历者、内行人、领域专家、领域爱好者，将高质量的内 …

小红书在线网页_小红书网页版入口 - 百度知道

Feb 19, 2025 · 知道商城 合伙人认证 投诉建议 意见反馈 账号申诉 非法信息举报 京ICP证030173号-1 京网文【2023】1034-029号 ©2025Baidu 使用百度前必读 | 知道协议 | 企业推广

卡路里、千焦、大卡傻傻分不清楚？关于热量看这一篇就够了

千焦和千卡的换算关系是：1000千焦=238.9大卡，1大卡（千卡）=4.18千焦（KJ），一般千焦换算成大卡可以直接除以4.18来计算如果要粗略计算热量，直接除以4即可。

一月到十二月的英文 - 百度知道

一月到十二月的英文一月：January，二月：February，三月:March 四月：April，五月：May，六月：June 七月：July，八月：August，九月：September十月：October，十一月：November，十二月：December 扩展资料

计算器运算结果为几**E+**几（比如**1e+1**）是什么意思_百度知道

计算器运算结果为几E+几（比如1e+1）是什么意思这个是科学计数法的表示法，数字超过了计算器的显示位数而使用了科学计数法。

我的世界切换生存和创造模式的命令是什么？_百度知道

Oct 3, 2024 · 1. 切换至生存模式：/gamemode survival。2. 切换至创造模式：/gamemode creative。详细解释：关于生存模式 生存模式是我的世界中最经典的游玩模式。在此模式下，玩家需要收集资源、建造庇护所、狩猎、制作工具等以保证生存。

知乎 - 有问题，就会有答案

知乎，中文互联网高质量的问答社区和创作者聚集的原创内容平台，于 2011 年 1 月正式上线，以「让人们更好的分享知识、经验和见解，找到自己的解答」为品牌使命。

1/8, 1/4, 1/2, 3/4,7/8英寸分别是多少厘米**?** - 知乎

把1英寸分成8等分：1/8 1/4 3/8 1/2 5/8 3/4 7/8 英寸。This is an arithmetic sequence since there is a common difference between each term. In this case, adding 18 to the previous term in the sequence gives the next term. In other words, an=a1+d (n−1). Arithmetic Sequence: d=1/8

为什么 *1* 不能被认为是质数？ - 知乎

质数就是“只能被1和它本身整除”的自然数。然而，我们必须在此基础之上增加一条警告，宣称数字1不是质数，这简直就像马后炮一样。

2025年**7**月哪一款手机性价比高？全品牌、全价位手机推荐与选购 **...**

2025年7月哪一款手机性价比高？全品牌、全价位手机推荐与选购指南（国补版） 吾人岛主 数码行业常驻人口（文章评论区免费咨询） 2.1 万赞同 7792 评论 1.4 万收藏

知乎 - 知乎

有问题，上知乎。知乎，可信赖的问答社区，以让每个人高效获得可信赖的解答为使命。知乎凭借认真、专业和友善的社区氛围， …

小红书在线网页_小红书网页版入口 - 百度知道

Feb 19, 2025 · 知道商城 合伙人认证 投诉建议 意见反馈 账号申诉 非法信息举报 京ICP证030173号-1 京网文【2023】1034-029 ...

卡路里、千焦、大卡傻傻分不清楚？关于热量看这一篇就够了

千焦和千卡的换算关系是：1000千焦=238.9大卡，1 大卡（千卡）=4.18千焦（KJ），一般千焦换算成大卡可以直接除以4.18来计算 ...

一月到十二月的英文 - 百度知道

一月到十二月的英文一月：January，二月：February ，三月:March 四月：April ，五月：May ，六月：June 七月：July，八 ...

计算器运算结果为几**E+**几（比如**1e+1**）是什么意思_百度知道

计算器运算结果为几E+几（比如1e+1）是什么意思这个是科学计数法的表示法，数字超过了计算器的显示位数而使用了科学计数法。

Unlock the secrets of geometry with our 1 3 practice distance and midpoints answer key. Discover how to master these concepts today—learn more!

Back to Home