Name & Surname: _____ Class: _____ Date: _____

Greater Than or Less Than



Write and graph x > c and x < c

About 45 minutes Level ★★★☆☆

Inequalities with x > c and x < c

An **inequality** compares two values. x > c means x is greater than c, and x < c means x is less than c.

- Read the **symbols** carefully: > means greater than, < means less than.
- Write the **variable** on the left: for taller than 48 inches, h > 48.
- Graph with an open circle at c and an **arrow**: right for >, left for <.
- The **solutions** are all numbers past c, so there are infinitely many.

Task A

Example done for you

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Tick True or False. Think about symbols and solutions.

Statement	True	False
x > 5 means x is **greater than** 5.	✓	
x < 8 has only one **solution**.		
In x < 4, the number 4 itself is a **solution**.		
All numbers greater than 10 are **solutions** to x > 10.		
h > 48 can mean height in inches is taller than 48 **inches**.		

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Write Inequalities

Practice writing x > c and x < c for real limits.

Key words

inequality: a math sentence using > or <

greater than: bigger than

less than: smaller than

solution: a number that makes it true

infinitely many: without end, goes on forever

boundary: the number c where solutions start

Task B

/12

Write the inequality for each limit. Watch the symbols.

WARM UP

1 Write x is **greater than** 5 as an inequality.

Answer: _____

2 Write x is **less than** 10 as an inequality.

Answer: _____

3 Write 7 is **less than** 12 using < or >.

Answer: _____

4 Write 20 is **greater than** 9 using < or >.

Answer: _____

PRACTICE

5 A backpack must weigh **less than** 20 pounds. Let w be weight in pounds. Write the inequality.

Answer: _____

6 To ride you must be **taller than** 48 inches. Let h be height in inches. Write the inequality.

Answer: _____

7 A quiz needs more than 15 **points** to pass. Let p be points. Write the inequality.

Answer: _____

8 Milk must stay **colder than** 40°F. Let t be temperature in °F. Write the inequality.

Answer: _____

PROBLEM SOLVING

9 You have $30. A book costs b dollars. You can buy it only if b is **less than** $30. Write the inequality and say if $28 works. Explain how you know.

Answer: _____

10 Speed s in miles per hour must be **less than** 55 miles per hour. Write the inequality.

Answer: _____

11 The **limit** is 55 miles per hour. A driver goes 62 miles per hour. How many miles per hour over the limit is that?

Answer: _____

12 A tank needs more than 100 **gallons**. It has 78 gallons. How many gallons are needed to reach 100 gallons?

Answer: _____

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Find the Error

Find the wrong step in each student's work.

Task C

/6

Find the wrong step. Explain the mistake and give the correct answer.



Student A

Write an inequality for x that is less than 5.

1. x is less than 5
2. = x > 5
3. So the answer is x > 5

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student B

Is 7 a solution to x < 7? Explain.

1. Test 7 in x < 7
2. 7 < 7 is true
3. So Yes, 7 is a solution

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student C

Show x > 3 on a number line.

1. Draw a number line with 3 marked
2. Draw an open circle at 3
3. Draw the arrow to the left of 3

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____

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Test Solutions

Check which numbers work and why there are so many.

Task D

/12

Test each number. Think about solutions and the boundary.

WARM UP

1 Is 4 a **solution** to x > 2? Write Yes or No.

Answer: _____

2 Is 1 a **solution** to x < 0? Write Yes or No.

Answer: _____

3 Is 10 a **solution** to x < 12? Write Yes or No.

Answer: _____

4 Is 3 a **solution** to x > 7? Write Yes or No.

Answer: _____

PRACTICE

5 For x > 6, which is a **solution**: 5 or 9?

Answer: _____

6 For x < 20, which is NOT a **solution**: 18 or 22?

Answer: _____

7 Does x < 5 include 5 itself? Write Yes or No.

Answer: _____

8 Does x > 0 have **infinitely many** solutions? Write Yes or No.

Answer: _____

PROBLEM SOLVING

9 A slide needs riders **taller than** 42 inches. Let h be height in inches. Write the inequality.

Answer: _____

10 Explain how you know that 43 inches and 60 inches are both **solutions** to h > 42.

Answer: _____

11 A cooler must stay **colder than** 45°F. It is 52°F now. By how much must it cool to reach 45°F?

Answer: _____

12 A bag can hold **less than** 12 apples. It has 9 apples. How many apples are needed to reach 12 apples?

Answer: _____

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Graph on Number Lines

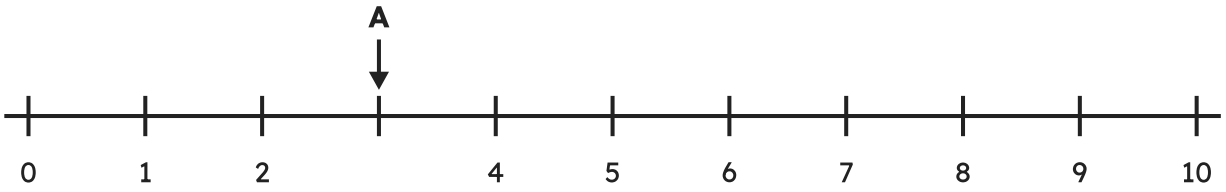
Use number lines to show inequalities and their solutions.

↑↓ Task E

/6

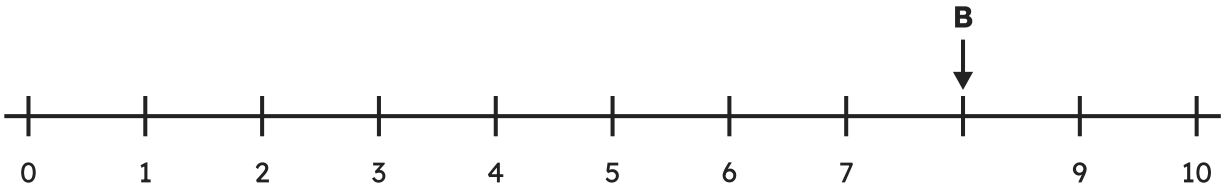
Line 1 is for x > 3 and line 2 is for x < 8. Find the boundary and mark solutions.

1



A = ☐ Draw an arrow to show: 5, 7

2



B = ☐ Draw an arrow to show: 5, 2

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Greater Than or Less Than

Task F

The answer is given. Write a possible question using inequalities.

The answer is: **x > 5**

What could the question be?

.....

.....

.....

The answer is: **d < 14**

What could the question be?

.....

.....

.....

The answer is: **infinitely many**

What could the question be?

.....

.....

.....

How did I do?

Circle a face for each line.

I can write x > c or x < c for a real-life condition.	☹ 😐 ☺
I can test solutions and explain infinitely many solutions.	☹ 😐 ☺
I can show solutions on a number line diagram.	☹ 😐 ☺

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Answer sheet: Greater Than or Less Than

Task A

1. True
2. False
3. False
4. True
5. True

Task B

1. $x > 5$
2. $x < 10$
3. $7 < 12$
4. $20 > 9$
5. $w < 20$
6. $h > 48$
7. $p > 15$
8. $t < 40$
9. $b < 30$, and \$28 works because $28 < 30$
10. $s < 55$
11. 7 miles per hour
12. 22 gallons

Task C

1. Step 2 is wrong: They used > for less than. The open end points to the larger number, so less than is <. Correct answer: $x < 5$
2. Step 2 is wrong: They thought < includes the boundary. $x < 7$ needs numbers smaller than 7, so 7 itself is not a solution. Correct answer: No, because 7 is not less than 7
3. Step 3 is wrong: They drew the arrow the wrong way. Greater than means numbers to the right of 3. Correct answer: Open circle at 3 with arrow to the right

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Task D

1. Yes
2. No
3. Yes
4. No
5. 9
6. 22
7. No
8. Yes
9. $h > 42$
10. Both 43 and 60 are greater than 42, so they make the inequality true.
11. 7°F
12. 3 apples

Task E

1. A = 3; arrows at 5, 7
2. B = 8; arrows at 5, 2

Task F

Answers will vary, e.g. x > 5 → Write an inequality for x is greater than 5. d < 14 → A book must be returned in less than 14 days. Let d be days. Write the inequality. infinitely many → How many solutions does x > 2 have?

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