

Solving Inequalities

Test each value. Is the inequality true or false?

1. $n + 6 < 14$ Example	Test $n = 5$ $5 + 6 = 11$ true false	Test $n = 8$ $8 + 6 = 14$ true false	Test $n = 9$ $9 + 6 = 15$ true false
2. $n + 9 > 15$	Test $n = 4$ $4 + 9 =$ _____ true false	Test $n = 6$ $6 + 9 =$ _____ true false	Test $n = 7$ $7 + 9 =$ _____ true false
3. $b - 5 \geq 8$	Test $b = 12$ $12 - 5 =$ _____ true false	Test $b = 13$ $13 - 5 =$ _____ true false	Test $b = 16$ $16 - 5 =$ _____ true false
4. $17 - k > 11$	Test $k = 3$ $17 - 3 =$ _____ true false	Test $k = 6$ $17 - 6 =$ _____ true false	Test $k = 9$ $17 - 9 =$ _____ true false
5. $12 + t \leq 20$	Test $t = 8$ $12 + 8 =$ _____ true false	Test $t = 9$ $12 + 9 =$ _____ true false	Test $t = 2$ $12 + 2 =$ _____ true false
6. $4 \times n < 30$	Test $n = 6$ $4 \times 6 =$ _____ true false	Test $n = 7$ $4 \times 7 =$ _____ true false	Test $n = 8$ $4 \times 8 =$ _____ true false
7. $6 \times p \geq 42$	Test $p = 5$ $6 \times 5 =$ _____ true false	Test $p = 7$ $6 \times 7 =$ _____ true false	Test $p = 9$ $6 \times 9 =$ _____ true false
8. $3 \times d + 4 > 25$	Test $d = 6$ $3 \times 6 + 4 =$ _____ true false	Test $d = 7$ $3 \times 7 + 4 =$ _____ true false	Test $d = 8$ $3 \times 8 + 4 =$ _____ true false

Solving Inequalities

Solve. Then list every whole number that makes it true.

Whole numbers are **0, 1, 2, 3, 4** and so on.

1. $n + 9 \leq 14$

Solve: $n \leq 5$ or $n < 6$

Example

Whole-number solutions: 0, 1, 2, 3, 4, 5

2. $n + 12 < 19$

Solve: _____

Whole-number solutions: _____

3. $15 - k > 11$

Solve: _____

Whole-number solutions: _____

4. $7 + b \leq 15$

Solve: _____

Whole-number solutions: _____

5. $20 - t > 12$

Solve: _____

Whole-number solutions: _____

6. $3 \times n < 13$

Solve: _____

Whole-number solutions: _____

7. $4 \times p \leq 36$

Solve: _____

Whole-number solutions: _____

8. $2 \times d + 5 < 11$

Solve: _____

Whole-number solutions: _____

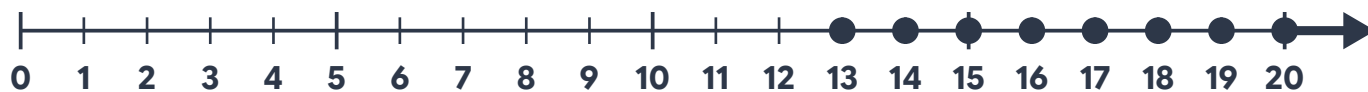
Solving Inequalities

Solve. Then graph the whole-number solutions.

1. $n + 3 > 15$

Solve: $n > 12$ or $n \geq 13$

Example



A dot goes on each whole number that works. The arrow shows that the solutions keep going: 21, 22, 23 and on.

2. $n + 8 < 14$

Solve: _____



3. $b - 4 \geq 11$

Solve: _____



4. $19 - k > 10$

Solve: _____



5. $5 \times t \geq 45$

Solve: _____



6. $3 \times n \leq 21$

Solve: _____



7. $2 \times p + 6 > 26$

Solve: _____



Solving Inequalities

Write an inequality for each story. Then answer the question.

1. A van can hold at most **12** people. There are **7** people in it now.
How many more people, **p**, can get in?

Example

Inequality: $7 + p \leq 12$
or $p + 7 \leq 12$

Answer: 5 or fewer

2. A bag holds fewer than **20** apples. It has **13** apples in it. How many more apples, **a**, can go in the bag?

Inequality: _____

Answer: _____

3. Sam has **18** grapes. He wants more than **10** grapes left for later. How many grapes, **g**, can he eat now?

Inequality: _____

Answer: _____

4. Tickets for the fair cost **\$4** each. Ana has **\$35**. How many tickets, **t**, can she buy?

Inequality: _____

Answer: _____

5. Pencils come in boxes of **6**. A class needs at least **40** pencils. How many boxes, **k**, should they buy?

Inequality: _____

Answer: _____

6. Kim earns **\$5** a day for walking a dog, plus a **\$10** bonus. She wants to earn more than **\$50**. How many days, **d**, must she walk the dog?

Inequality: _____

Answer: _____

Solving Inequalities

Match inequalities and graphs of their whole-number solutions.

Write the letter of the graph that shows the solutions.

1. $n + 5 < 9$

B

Example



2. $n + 7 \geq 12$



3. $3 \times k \leq 12$



4. $b - 1 > 2$



Write an inequality for each graph.



$n \leq 6$

or $n < 7$

Example







Solving Inequalities

Test each value. Is the inequality true or false?

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2. $n + 9 > 15$	Test $n = 4$ $4 + 9 = 13$ true false	Test $n = 6$ $6 + 9 = 15$ true false	Test $n = 7$ $7 + 9 = 16$ true false
3. $b - 5 \geq 8$	Test $b = 12$ $12 - 5 = 7$ true false	Test $b = 13$ $13 - 5 = 8$ true false	Test $b = 16$ $16 - 5 = 11$ true false
4. $17 - k > 11$	Test $k = 3$ $17 - 3 = 14$ true false	Test $k = 6$ $17 - 6 = 11$ true false	Test $k = 9$ $17 - 9 = 8$ true false
5. $12 + t \leq 20$	Test $t = 8$ $12 + 8 = 20$ true false	Test $t = 9$ $12 + 9 = 21$ true false	Test $t = 2$ $12 + 2 = 14$ true false
6. $4 \times n < 30$	Test $n = 6$ $4 \times 6 = 24$ true false	Test $n = 7$ $4 \times 7 = 28$ true false	Test $n = 8$ $4 \times 8 = 32$ true false
7. $6 \times p \geq 42$	Test $p = 5$ $6 \times 5 = 30$ true false	Test $p = 7$ $6 \times 7 = 42$ true false	Test $p = 9$ $6 \times 9 = 54$ true false
8. $3 \times d + 4 > 25$	Test $d = 6$ $3 \times 6 + 4 = 22$ true false	Test $d = 7$ $3 \times 7 + 4 = 25$ true false	Test $d = 8$ $3 \times 8 + 4 = 28$ true false

Solving Inequalities

Solve. Then list every whole number that makes it true.

Whole numbers are 0, 1, 2, 3, 4 and so on.

1. $n + 9 \leq 14$

Solve: $n \leq 5$ or $n < 6$

Example

Whole-number solutions: 0, 1, 2, 3, 4, 5

2. $n + 12 < 19$

Solve: $n < 7$ or $n \leq 6$

Whole-number solutions: 0, 1, 2, 3, 4, 5, 6

3. $15 - k > 11$

Solve: $k < 4$ or $k \leq 3$

Whole-number solutions: 0, 1, 2, 3

4. $7 + b \leq 15$

Solve: $b \leq 8$ or $b < 9$

Whole-number solutions: 0, 1, 2, 3, 4, 5, 6, 7, 8

5. $20 - t > 12$

Solve: $t < 8$ or $t \leq 7$

Whole-number solutions: 0, 1, 2, 3, 4, 5, 6, 7

6. $3 \times n < 13$

Solve: $n \leq 4$ or $n < 5$

Whole-number solutions: 0, 1, 2, 3, 4

7. $4 \times p \leq 36$

Solve: $p \leq 9$ or $p < 10$

Whole-number solutions: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

8. $2 \times d + 5 < 11$

Solve: $d < 3$ or $d \leq 2$

Whole-number solutions: 0, 1, 2

Solving Inequalities

Solve. Then graph the whole-number solutions.

1. $n + 3 > 15$

Solve: $n > 12$ or $n \geq 13$

Example



A dot goes on each whole number that works. The arrow shows that the solutions keep going: 21, 22, 23 and on.

2. $n + 8 < 14$

Solve: $n < 6$ or $n \leq 5$



3. $b - 4 \geq 11$

Solve: $b \geq 15$ or $b > 14$



4. $19 - k > 10$

Solve: $k < 9$ or $k \leq 8$



5. $5 \times t \geq 45$

Solve: $t \geq 9$ or $t > 8$



6. $3 \times n \leq 21$

Solve: $n \leq 7$ or $n < 8$



7. $2 \times p + 6 > 26$

Solve: $p > 10$ or $p \geq 11$



Solving Inequalities

Write an inequality for each story. Then answer the question.

1. A van can hold at most **12** people. There are **7** people in it now. How many more people, **p**, can get in?

Example

Inequality: $7 + p \leq 12$
or $p + 7 \leq 12$

Answer: 5 or fewer

2. A bag holds fewer than **20** apples. It has **13** apples in it. How many more apples, **a**, can go in the bag?

Inequality: $13 + a < 20$
or $a + 13 < 20$

Answer: 6 or fewer

3. Sam has **18** grapes. He wants more than **10** grapes left for later. How many grapes, **g**, can he eat now?

Inequality: $18 - g > 10$

Answer: 7 or fewer

4. Tickets for the fair cost **\$4** each. Ana has **\$35**. How many tickets, **t**, can she buy?

Inequality: $4 \times t \leq 35$
or $t \times 4 \leq 35$

Answer: 8 or fewer

5. Pencils come in boxes of **6**. A class needs at least **40** pencils. How many boxes, **k**, should they buy?

Inequality: $6 \times k \geq 40$
or $k \times 6 \geq 40$

Answer: 7 or more

6. Kim earns **\$5** a day for walking a dog, plus a **\$10** bonus. She wants to earn more than **\$50**. How many days, **d**, must she walk the dog?

Inequality: $5 \times d + 10 > 50$
or $10 + 5 \times d > 50$

Answer: 9 or more

Solving Inequalities

Match inequalities and graphs of their whole-number solutions.

Write the letter of the graph that shows the solutions.

1. $n + 5 < 9$

B

Example



2. $n + 7 \geq 12$

A



3. $3 \times k \leq 12$

D



4. $b - 1 > 2$

C



Write an inequality for each graph.



$n \leq 6$

or $n < 7$

Example



$n \geq 8$

or $n > 7$



$n \leq 1$

or $n < 2$



$n \geq 3$

or $n > 2$