Name: _____ Class: _____ Date: _____ ID: A

Inequalities Word Problems

Multiple Choice

Identify the choice that best completes the statement or answers the question.

Identify the graph of the inequality from the given description.

____ 1. x is negative.

a.

b.

c.

d.

Short Answer

Write the inequality in words.

2. $3n < 52$

3. $5n - 10 > 26$

4. Tina can type at least 60 words per minute. Write and graph an inequality to model this situation.

Write an inequality to model the situation.

5. Thomas earned $44 or more.

6. A number exceeds 21.

7. Suppose you had d dollars in your bank account. You spent \$22 but have at least \$28 left. How much money did you have initially? Write and solve an inequality that represents this situation.

8. Jeanette wants to tile the floor of a room in her house. The square tiles measure $\frac{3}{4}$ ft on each side. The room is 10 ft wide.
   a. Write an inequality to describe how many tiles are needed to make one row of tiles across the width of the room.
   b. Solve the inequality.
   c. How many tiles should Jeanette buy to form one row?

9. The French club is sponsoring a bake sale. If their goal is to raise at least \$140, how many pastries must they sell at \$3.50 each in order to meet that goal? Write and solve an inequality.

10. The width of a rectangle is 33 centimeters. The perimeter is at least 776 centimeters.
    a. Write and solve an inequality to find the length of the rectangle.
    b. Write an inequality to find the area of the rectangle.

Solve the equation.

11. $78 = -2(m + 3) + m$

12. $6 = 2(x + 8) - 5x$

13. Melissa wants to spend no more than \$300 on school clothes. She spends \$75 on a coat and then wants to buy some sweaters that are on special for \$10 each. Solve the inequality $75 + 10s \leq 300$ to find the greatest number of sweaters s she can buy.

14. A small airplane can carry less than 1,050 pounds of luggage and mail. The mail for the day weighs 490 pounds. If each passenger brings 70 pounds of luggage, what is the greatest possible number of passengers that can be taken?

15. Four times the sum of a number and 15 is at least 120. Let x represent the number. Find all possible values for x.

Inequalities Word Problems
Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: L2 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable
NAT: NAEP 2005 A3a | ADP J.3.1 STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1)
TOP: 4-1 Example 3 KEY: translating an inequality | graphing

SHORT ANSWER

2. ANS:
Three times n is less than fifty-two.

PTS: 1 DIF: L3 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable
NAT: NAEP 2005 A3a | ADP J.3.1 STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1)
KEY: translating an inequality | inequality

3. ANS:
Ten less than five times a number is greater than twenty-six.

PTS: 1 DIF: L3 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable
NAT: NAEP 2005 A3a | ADP J.3.1 STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1)
KEY: translating an inequality | inequality

4. ANS:
$t \geq 60$

PTS: 1 DIF: L3 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable
NAT: NAEP 2005 A3a | ADP J.3.1 STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1)
TOP: 4-1 Example 5
KEY: translating an inequality | word problem | problem solving

5. ANS:
$t \geq 44$

PTS: 1 DIF: L3 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable
NAT: NAEP 2005 A3a | ADP J.3.1 STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1)
TOP: 4-1 Example 5 KEY: modeling with inequalities | translating an inequality

6. ANS:
$n > 21$

PTS: 1 DIF: L2 REF: 4-1 Inequalities and Their Graphs
OBJ: 4-1.2 Graphing and Writing Inequalities in One Variable
NAT: NAEP 2005 A3a | ADP J.3.1 STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1)
KEY: modeling with inequalities | translating an inequality

7. ANS:
$d - 22 \geq 28$; $d \geq 50$

PTS: 1 DIF: L3 REF: 4-2 Solving Inequalities Using Addition and Subtraction
OBJ: 4-2.1 Using Addition to Solve Inequalities
NAT: NAEP 2005 N5e | NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1) TOP: 4-2 Example 4
KEY: Addition Property of Inequality | problem solving | word problem | solving inequalities

8. ANS:
$\frac{3}{4}t \geq 10$; $t \geq 13\frac{1}{3}$; 13

PTS: 1 DIF: L4
REF: 4-3 Solving Inequalities Using Multiplication and Division
OBJ: 4-3.1 Using Multiplication to Solve Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1) TOP: 4-3 Example 4
KEY: Multiplication Property of Inequality for c > 0 | problem solving | word problem | solving inequalities | multi-part question

9. ANS:
$3.50p \geq 140$; $p \geq 40$

PTS: 1 DIF: L3
REF: 4-3 Solving Inequalities Using Multiplication and Division
OBJ: 4-3.2 Using Division to Solve Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c | ADP J.3.1
STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1) TOP: 4-3 Example 4
KEY: Division Property of Inequality | problem solving | word problem | solving inequalities

10. ANS:
$2(33) + 2\ell \geq 776$; $\ell \geq 355$; $A \geq 33(355)$

PTS: 1 DIF: L3 REF: 4-4 Solving Multi-Step Inequalities
OBJ: 4-4.1 Solving Inequalities With Variables on One Side
NAT: NAEP 2005 A3b | NAEP 2005 A3c | NAEP 2005 A4a | ADP J.3.1
STA: CT C1.3a(1) | CT C1.3a(2) | CT E1.3a(1) TOP: 4-4 Example 2
KEY: solving inequalities | problem solving | word problem | solving inequalities | multi-part question

11. ANS:
-84

PTS: 1 DIF: L2 REF: 7-2 Solving Multi-Step Equations
OBJ: 7-2.2 Using the Distributive Property
NAT: NAEP 2005 A4a | NAEP 2005 A4c
STA: 8CT 8:1.3 | 8CT 8:1.3a | 8CT 8:1.3a(1) | 8CT 8:1.3a(2) | 8CT 8:2.1 | 8CT 8:2.1a(3) | 8CT 8:2.2
TOP: 7-2 Example 3
KEY: combining like terms | solving multi-step equations | Distributive Property

12. ANS:
$3\frac{1}{3}$

PTS: 1 DIF: L3 REF: 7-2 Solving Multi-Step Equations
OBJ: 7-2.2 Using the Distributive Property
NAT: NAEP 2005 A4a | NAEP 2005 A4c
STA: 8CT 8:1.3 | 8CT 8:1.3a | 8CT 8:1.3a(1) | 8CT 8:1.3a(2) | 8CT 8:2.1 | 8CT 8:2.1a(3) | 8CT 8:2.2
TOP: 7-2 Example 3
KEY: combining like terms | solving multi-step equations | Distributive Property

13. ANS:
22 sweaters

PTS: 1 DIF: L3 REF: 7-6 Solving Two-Step Inequalities
OBJ: 7-6.1 Solving Two-Step Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c
STA: 8CT 8:1.3 | 8CT 8:1.3a | 8CT 8:2.1 | 8CT 8:2.1a | 8CT 8:2.1a(3) | 8CT 8:2.2 | 8CT 8:2.2a | 8CT 8:3.3 | 8CT 8:3.3b TOP: 7-6 Example 1
KEY: solving two-step inequalities | problem solving | word problem

14. ANS:
7 passengers

PTS: 1 DIF: L3 REF: 7-6 Solving Two-Step Inequalities
OBJ: 7-6.2 Using Two-Step Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c
STA: 8CT 8:1.3 | 8CT 8:1.3a | 8CT 8:2.1 | 8CT 8:2.1a | 8CT 8:2.1a(3) | 8CT 8:2.2 | 8CT 8:2.2a | 8CT 8:3.3 | 8CT 8:3.3b TOP: 7-6 Example 3
KEY: solving two-step inequalities | problem solving | word problem

15. ANS:
$x \geq 15$

PTS: 1 DIF: L2 REF: 7-6 Solving Two-Step Inequalities
OBJ: 7-6.2 Using Two-Step Inequalities
NAT: NAEP 2005 A4a | NAEP 2005 A4c
STA: 8CT 8:1.3 | 8CT 8:1.3a | 8CT 8:2.1 | 8CT 8:2.1a | 8CT 8:2.1a(3) | 8CT 8:2.2 | 8CT 8:2.2a | 8CT 8:3.3 | 8CT 8:3.3b TOP: 7-6 Example 3
KEY: problem solving | solving two-step inequalities | word problem