

Chapter 5 — Inequalities

Worksheet C: Mixed Application

Name: _____ Grade: _____ Date: _____

1. A ride requires a height of at least 132 cm. Marcus is 120 cm tall. Write and solve an inequality for how many centimetres he needs to grow.

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2. A company needs total revenue of more than \$500. Each product sells for \$12.50. Write and solve an inequality for the minimum whole number of products to sell.

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3. A scholarship requires an average from 75 to 90 inclusive. A student scores 88, 72, and 91. Does the student qualify? Show the average and compare it to the required range.

4. A student solves $-6x \geq 18$ and writes $x \geq -3$. Is the student correct? If not, find the error and solve correctly.

5. A student must earn an average above 75 on four tests. Scores so far are 68, 72, and 80. What score is needed on the fourth test?

6. A triangle has side lengths 8 cm, 9 cm, and $2x+1$ cm. Its perimeter must be less than 30 cm. Write and solve an inequality for x .

7. Write and solve an inequality for: A number x multiplied by 3 is at most 12.

8. Solve, graph, and verify with one value from the solution region: $3x - 2 > 2x + 1$

9. A freight elevator can carry at most 900 kg. A shipment already weighs 240 kg. Each crate added weighs 55 kg. Write and solve an inequality for the maximum number of crates c that can be added. Include a sentence answer.

10. A school fundraiser has already collected \$180. Each additional coupon book sold adds \$14. The school wants to collect at least \$600. Write and solve an inequality for the number of additional coupon books b that must be sold. Include a sentence answer.

11. Write and graph a compound inequality for: x is no more than 5 and at least 3.

12. Explain with a numerical example why the inequality symbol flips when both sides are multiplied by a negative number.

13. Solve, graph, and check: $-2(x-4) < 6$

14. Non-Routine: A student graphs $x \leq 2$ with an open circle at 2 and an arrow to the left. The student explains, “The arrow is correct because the values are less than 2.” Is the graph complete and correct? Explain whether 2 belongs to the solution set, then describe the corrected graph. Use a value check to support the explanation.

15. Non-Routine: A student says that $-3 \leq x \leq 4$ means x can be any number less than 4, so -10 is a solution. Is the student correct? Explain what both parts of the compound inequality require. Give one value that works and one value that does not work. Then describe the graph.
