GCSE Maths: Forming and solving inequalities from context (Higher): answers

GCSE Maths - Inequalities - Higher - Lesson 10.6

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at **websink.site/gcse/maths/ch10-inequalities/higher/forming-and-solving-inequalities-from-context/**

Exercise 10G Inequalities in context (Non-calculator)

1 **Write an inequality for each situation. You do not need to solve it.**

(a) Ali has £40. Pens cost £3 each. He buys n pens and a £5 book.

Answer: $3n + 5 \leq 40$

(b) A taxi charges £4 plus £2 per mile. A journey of m miles costs less than £30.

Answer: $2m + 4 < 30$

(c) I think of a number x, multiply it by 5 and subtract 8. The result is at least 22.

Answer: $5x - 8 \geq 22$

(d) The perimeter of a square with side s cm is greater than 50 cm.

Answer: $4s > 50$

(e) A rectangle has width 5 cm and length $(x + 3)$ cm. Its perimeter is at most 36 cm.

Answer: $2x + 16 \leq 36$

2 **Ali has £40. Pens cost £3 each, and he also buys a £5 book. What is the greatest number of pens he can buy?**

Answer: 11 pens

3 **A taxi charges £4 plus £2 per mile. Rosie has less than £30 to spend on the fare. How far can she travel?**

Answer: $m < 13$ miles

4 **A lift can carry at most 200 kg. Sam weighs 80 kg and carries boxes that each weigh 12 kg into the lift. What is the greatest number of boxes he can carry?**

Answer: 10 boxes

5 **A club sells cakes for £3 each. The ingredients cost £25 in total. They want a profit of at least £50. How many cakes must they sell, at least?**

Answer: 25 cakes

6 **Maya has saved £120. She saves £15 each week. She wants to have at least £400. What is the smallest number of whole weeks she needs to save?**

Answer: 19 weeks

7 **Ali is x years old. His sister is 3 years older. The sum of their ages is less than 30. What is the greatest whole number of years Ali could be?**

Answer: 13 years old

8 Gym A charges £15 to join and £8 per month. Gym B charges £5 to join and £12 per month. After how many whole months is Gym A cheaper than Gym B? Give the smallest number of months.

> **Answer:** 3 months

9 Zara scores 64, 71 and 58 in three tests. She wants a mean of at least 65 over four tests. What must she score in the fourth test?

> **Answer:** $x \geq 67$ marks

10 I think of a whole number, double it, and subtract 7. The answer is greater than 15. What is the smallest number I could be thinking of?

> **Answer:** 12

11 An isosceles triangle has two sides of length $(2x + 1)$ cm and a third side of 9 cm. Its perimeter is less than 40 cm. Find the possible values of x.

> **Answer:** $x < 7.25$

12 In the cinema problem a student gets $n \leq 6.29$ and answers "6.29 tickets". Explain why this is wrong and what the answer should be.

> **Answer:** Tickets must be whole numbers, so the greatest is 6

13 A student writes "each notebook costs £2 and I have £15, so $2n \geq 15$". Explain the mistake and write the correct inequality.

> **Answer:** The cost must not be more than £15, so $2n \leq 15$

14 Two sides of a triangle are 5 cm and 8 cm. The third side is x cm. In any triangle the sum of two sides must be greater than the third side. Write down the range of values of x.

> **Answer:** $3 < x < 13$

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