Name:

Exam Style Questions

Inequalities

Corbettmaths

Equipment needed: Calculator, Ruler, Pencil and Pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

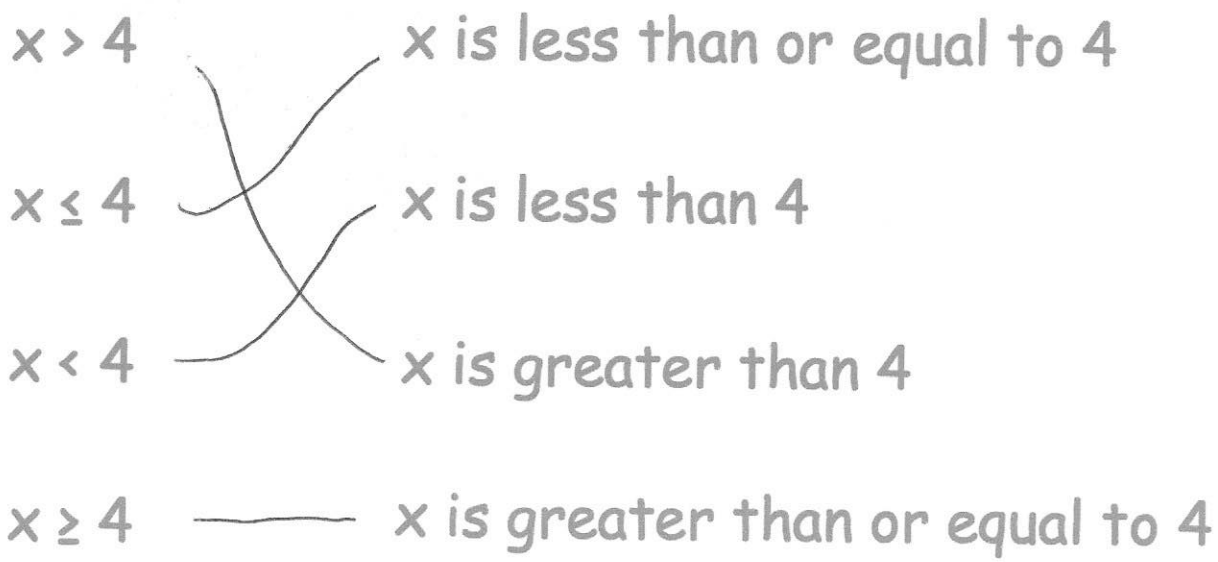
Video Tutorial

www.corbettmaths.com/contents

Videos 176, 177, 178, 179

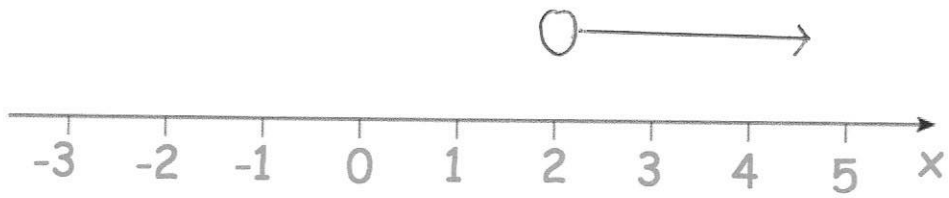
Answers and Video Solutions

1. Match each inequality to the correct description.



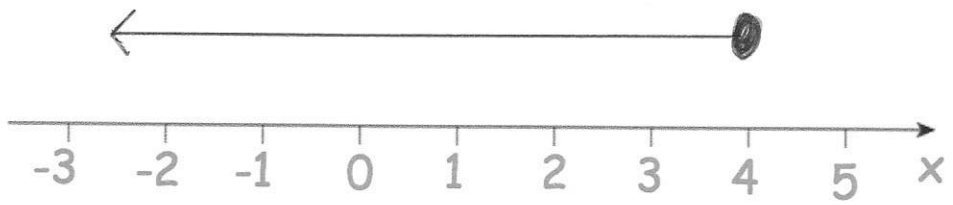
(2)

2. Represent the inequality $x > 2$ on this number line.



(1)

3. Represent the inequality $x \leq 4$ on this number line.



(1)

4. y is greater than or equal to 2

Circle the correct inequality.

$y > 2$ $\quad$ $y \geq 2$ $\quad$ $y \leq 2$ $\quad$ $y < 2$

(1)

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5. Solve $3x < 24$

$\div 3 \quad \div 3$

$x < 8$

$x < 8$

(1)

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6. Solve the inequality $3x - 8 > 16$

$+8 \quad +8$

$3x > 24$

$\div 3 \quad \div 3$

$x > 8$

$x > 8$

(2)

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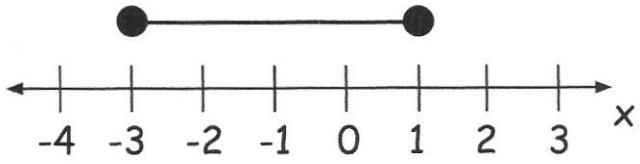
7. An inequality is represented on the number line.



Circle the correct inequality

$-3 < x < 1$ $\quad$ $-3 \leq x < 1$

$-3 \leq x \leq 1$ $\quad$ $-3 < x \leq 1$

(1)

8. (a) Solve the inequality $2x - 1 < 9$

$+1 \quad +1$

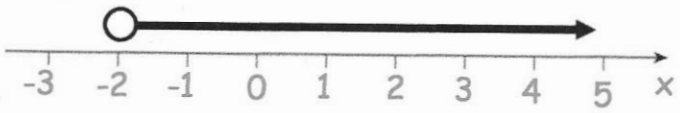
$2x < 10$

$\div 2 \quad \div 2$

$x < 5$

$x < 5$

(2)



(b) Write down the inequality shown on the number line above

$x > -2$

(1)

(c) Write down **all** the integers that satisfy both inequalities shown in part (a) and (b).

$-1, 0, 1, 2, 3, 4$

(1)

9. Circle the list of integers that satisfies the inequality $4 \leq n < 8$

4, 5, 6, 7, 8	5, 6, 7, 8
4, 5, 6, 7	5, 6, 7

(1)

10. (a) n is an integer.

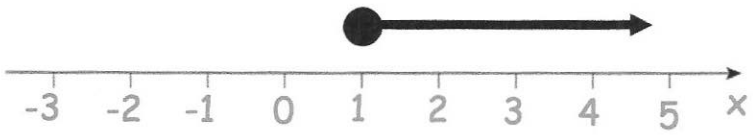
$$-2 < n \leq 3$$

List the possible values of n.

-1, 0, 1, 2, 3

(2)

(b)



Write down the inequality shown in the diagram.

$x \geq 1$

(2)

(c) Solve $3y - 4 > 17$

+4 +4

$3y > 21$

÷3 ÷3

$y > 7$

$y > 7$

(2)

11. Write down **one** integer which satisfies the inequality $6x > 42$

10

(1)

12. (a) Solve $3x + 4 \leq 13$

$-4 \quad -4$

$3x \leq 9$

$\div 3 \quad \div 3$

$x \leq 3$

$x \leq 3$

(2)

(b) Write down **all** the integer values of x that satisfies $-2 \leq 2x < 6$

$\div 2 \quad \div 2 \quad \div 2$

$-1 \leq x < 3$

$-1, 0, 1, 2$

(2)

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13. Solve the inequality $5x + 2 < 6$

$-2 \quad -2$

$5x < 4$

$\div 5 \quad \div 5$

$x < 0.8$

$x < 0.8$

(2)

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14. Write down **all** the integer values of x that satisfies $9 < 4x \leq 28$

$\div 4 \quad \div 4 \quad \div 4$

$2.25 < x \leq 7$

$3, 4, 5, 6, 7$

(2)

16. (a) Solve $4n < 9 - 2n$

+2n +2n

$6n < 9$

÷6 ÷6

$n < 1.5$

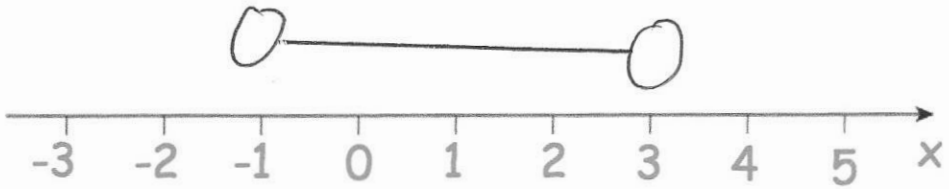
$n < 1.5$

(2)

(b) On the number line, show the set of values of x for which $1 < x + 2 < 5$

-2 -2 -2

$-1 < x < 3$



(2)

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17. (a) Solve this inequality

$5x - 2 < 22$

+2 +2

$5x < 24$

÷5 ÷5

$x < 4.8$

$x < 4.8$

(2)

(b) Given also that x > 1 and x is an integer.
Write down all the possible values of x.

2, 3, 4

(1)

15. (a) Solve the inequality $4x + 6 \geq 2$

$-6 \quad -6$

$4x \geq -4$

$\div 4 \quad \div 4$

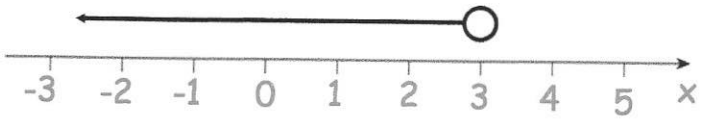
$x \geq -1$

$x \geq -1$

.....

(2)

(b) Write down the inequality shown by the diagram.



$x < 3$

.....

(1)

(c) Write down all the integers that satisfy both inequalities shown in part (a) and (b).

$-1, 0, 1, 2$

.....

(1)

18. Solve the inequality $2(3x - 5) \geq 43$

$6x - 10 \geq 43$

$6x \geq 53$

$x \geq \frac{53}{6}$ or $x \geq 8\frac{5}{6}$ or $x \geq 8.833...$

.....

(2)

19. Solve the inequality $2x + 9 > 19 - 8x$

$10x + 9 > 19$

$10x > 10$

$x > 1$

$x > 1$

.....

(2)

20. (a) Solve the inequality $3(x - 4) \leq 15$

$3x - 12 \leq 15$

$3x \leq 27$

$x \leq 9$

$x \leq 9$

.....

(2)

(b) Write down the inequality shown by the diagram.

$-1 \leq x < 4$

.....

(2)

21. (a) Solve the inequality $3x + 7 < 20$

$-7 \quad -7$

$3x < 13$

$x < 4.333...$

or $x < \frac{13}{3}$

$x < 4.333...$

or $x < \frac{13}{3}$ **(2)**

(b) Write down the integer value of x that satisfies $16 \leq 3x < 20$

$\div 3 \quad \div 3 \quad \div 3$

$5.33... \leq x < 6.66...$

6

(2)

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22. (a) Solve the inequality $9x + 4 < 5x - 14$

$-5x \quad -5x$

$4x + 4 < -14$

$-4 \quad -4$

$4x < -18$

$x < -4.5$

$x < -4.5$

(2)

(b) y is an integer.

Write down all the solutions of the inequality $-8 \leq 2y < 0$

$\div 2 \quad \div 2 \quad \div 2$

$-4 \leq y < 0$

$-4, -3, -2, -1$

(3)

23. $-4 \leq n < 1$

n is an integer.

(a) Write down all the possible values of n.

$-4, -3, -2, -1, 0$

(2)

(b) Solve the inequality $4x + 11 < 27$

$-11 \quad -11$

$4x < 16$

$x < 4$

$x < 4$

(2)

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24. Lee is y years old.

Toby is 8 years younger than Lee. $y - 8$

The sum of their ages is less than 41.

(a) Write down in terms of y, an inequality to show this information.

$2y - 8 < 41$

(2)

(b) Work out the oldest age that Lee can be.
Give your answer as a whole number of years.

$2y < 49$

$y < 24.5$

24

(3)

25. x is an integer.

Write down all the solutions of the inequality $3 < 2x + 1 < 13$

$-1 \quad -1 \quad -1$

$2 < 2x < 12$

$\div 2 \quad \div 2 \quad \div 2$

$1 < x < 6$

2, 3, 4, 5

(3)

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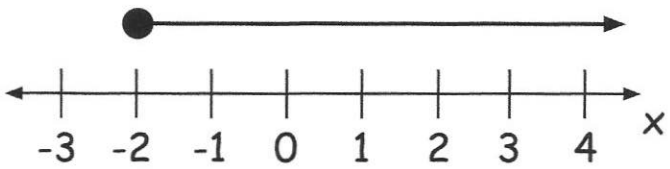
26. Lorcan has been asked to solve the inequality $4x - 2 \geq 9x + 8$

His solution is shown on the number line.



Is Lorcan's solution correct?
Explain your answer.

$4x - 2 \geq 9x + 8$

$-4x \quad -4x$

$-2 \geq 5x + 8$

$-8 \quad -8$

$-10 \geq 5x$

$-2 \geq x$

$x \leq -2$

The arrow should point to the left as the correct answer is $x \leq -2$ and he has drawn $x \geq -2$

(3)

27. Annie, Beth and Carly go shopping.

Annie spend m pounds.
Beth spend twice as much as Annie. $2m$
Carly spend 5 pounds more than Annie. $m+5$

The total amount of money spent, in pounds, is more than £60.

(a) Write down, in terms of m, an inequality to show this information.

$4m + 5 > 60$

$4m + 5 > 60$

$4m + 5 > 60$

.....

(2)

Each girl spends an whole number of pounds.

(b) Work out the least each girl could have spent.

$4m > 55$

$m > 13.75$

Annie £ 14

Beth £ 28

Carly £ 19

(4)

28. Solve $-5x < 40$

$\div -5 \quad \div -5$

$x > -8$

$x > -8$

(1)

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29. Solve $9x > 5x - 28$

$-5x \quad -5x$

$4x > -28$

$\div 4 \quad \div 4$

$x > -7$

$x > -7$

(2)

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30. Solve $\frac{4x}{3} - 7 < 11$

$+7 \quad +7$

$\frac{4x}{3} < 18$

$4x < 54$

$x < 13.5$

$18 \times 3 = 54$

$54 \div 4 = 13.5$

$x < 13.5$

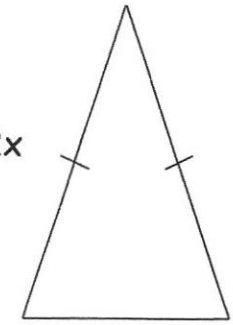
(3)

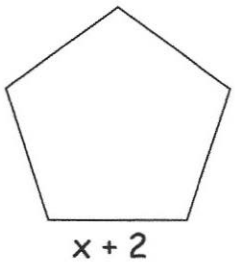
31. Here is an isosceles triangle and a regular pentagon.
The measurements are in centimetres.

Perimeter

$2x + 2x + (15-x)$

$3x + 15$





Perimeter

$5(x+2)$

$5x + 10$

The perimeter of the pentagon is greater than the perimeter of the triangle.

Find the possible values of x

$5x + 10 > 3x + 15$

$2x + 10 > 15$

$2x > 5$

$x > 2.5$

$x > 2.5$

.....

(4)

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32. Solve $8 < 10 - \frac{x}{2}$

$8 + \frac{x}{2} < 10$

$\frac{x}{2} < 2$

$x < 4$

$x < 4$

.....

(3)

33. Write down the largest integer that satisfies $\frac{10-4x}{7} > 5$

$10 - 4x > 35$

$10 > 35 + 4x$

$-25 > 4x$

$4x < -25$

$x < -6.25$

$x < -6.25$

(3)

34. Given

$2 \leq y \leq 8$

$7 \leq z \leq 12$

Find $y + z$

$9 \leq y + z \leq 20$

(2)

35. x and y are integers

$x \geq 15$

$y > 18$

Work out the smallest possible value of $3x + y$

$3x \geq 45$ $\quad$ $y > 18$

45 $\quad$ 19

$45 + 19 = 64$

64

.....

(2)