

دليل حل المتباينات ذات الخطوة الواحدة



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف التاسع المتقدم ← رياضيات ← الفصل الأول ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 19:38:31 2026-08-29

ملفات اكتب للمعلم اكتب للطالب | اختبارات الكترونية | اختبارات | حلول | عروض بوربوينت | أوراق عمل
منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي | للمدرس

المزيد من مادة
رياضيات:

إعداد: Aghead

التواصل الاجتماعي بحسب الصف التاسع المتقدم



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف التاسع المتقدم والمادة رياضيات في الفصل الأول

كتابة وتفسير المعادلات - الوحدة الثانية

1

حل اختبار نهائي وفق الهيكل الوزاري منهج ريفيل

2

حل نموذج تدريبي Exam Mock وفق الهيكل الوزاري الجديد منهج ريفيل

3

حل نموذج اختبار تجريبي Exam Mock وفق الهيكل الوزاري منهج ريفيل

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نموذج اختبار تجريبي Exam Mock وفق الهيكل الوزاري منهج ريفيل

5



وزارة التربية والتعليم
MINISTRY OF EDUCATION

الصف التاسع متقدم ريفيل الوحدة السادسة Linear Inequalities لعام 2026 - 2027

إحجز مكانك واستعد للامتحان بثقة كاملة

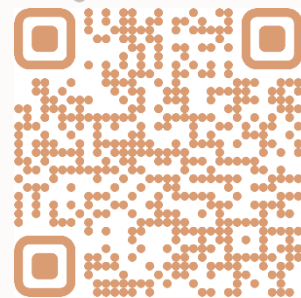
احصل على الشرح الكامل للصف من خلال:

التواصل والحجز عبر الـ Whatsapp
اضغط على الرقم: 0566991363

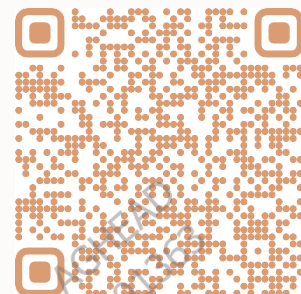


Mr. Aghead

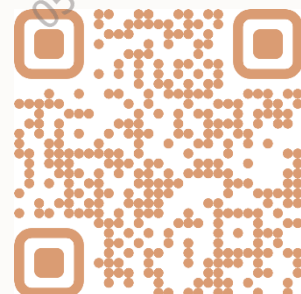
للتواصل والحجز



شرح الدروس



انضم للقناة



للتواصل اضغط الرقم:
0566991363

Mr. Aghead

يمكنكم الحصول على

شرح
دروس
الفصل
كامل

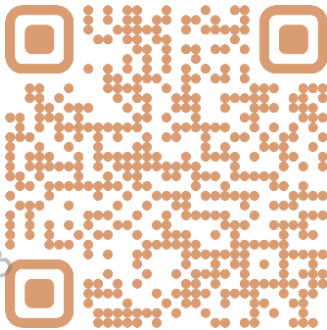
ملازم
محلولة

ب 149
درهم فقط

اختبارات

MR.AGHEAD

0566991363



لا تتردد في التواصل
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Lesson 1 – Solving One-Step Inequalities

دليل حل المتباينات ذات الخطوة الواحدة

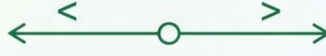
المرحلة 2: التمثيل البياني للحل

تحديد اتجاه السهم



ارسم سهماً لليسار للقيم "أصغر من" ولليمين للقيم "أكبر من" لتظليل منطقة الحل.

الدائرة المفتوحة مقابل الدائرة المغلقة



استخدم دائرة مفتوحة لرموز ($<$, $>$) لبيان عدم اشتغال القيمة.



استخدم دائرة مغلقة (نقطة) لرموز ($\leq$, $\geq$) لبيان اشتغال القيمة.

المرحلة 1: قواعد الحل الرياضي (خطوات الحل)

الجمع والطرح لعزل المتغير

أضف أو اطرح نفس القيمة من طرفي المتباينة للحفاظ على صحتها دون تغيير اتجاه الرمز.



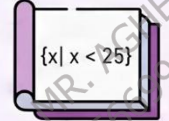
تنبيه: الضرب أو القسمة في عدد سالب

يجب عكس اتجاه رمز المتباينة (مثلاً من $<$ إلى $>$) عند الضرب أو القسمة في عدد سالب.



تدوين بناء المجموعة {x | ...}

اكتب الحل بصيغة رياضية موجزة، مثل $\{x | x < 25\}$ والتي تعني "مجموعة كل القيم x بحيث x أصغر من 25".



الكلمات المفتاحية للمسائل الكلامية

رمز المتباينة المقابل	المصطلح اللفظي
$\leq$	على الأكثر / لا يزيد عن
$\geq$	على الأقل / لا يقل عن
$<$	أصغر من / أقل من

Mastering One-Step Inequalities: A Step-by-Step Guide

Understanding Inequalities

An inequality compares two expressions using $<$, $>$, $\leq$, or $\geq$. Solving involves isolating the variable using inverse operations, with a special rule for negatives.

PART 1: Solving the Inequality



1. Isolate the variable with inverse operations

Use the Addition or Subtraction properties to move constants to the opposite side.



KEY RULE: The "Negative Flip" Rule.

$$\begin{array}{l} \frac{x}{-3} < 2 \quad \xrightarrow{\times -3} \quad x < -6 \\ \frac{-2x}{-2} \geq \frac{8}{-2} \quad \xrightarrow{\div -2} \quad x \leq -4 \end{array}$$

Reverse the inequality symbol ONLY when multiplying or dividing by a negative number.

$$\{x | x < a\}$$

EXPRESSING SOLUTIONS: Set-Builder Notation

Write final answers as $\{x | x < a\}$ to represent the entire solution set.

PART 2: Graphing the Solution

2. Select the correct endpoint circle



Open Circle
($<$ or $>$)

Closed Dot
($\leq$ or $\geq$)

Use an open circle for $<$ or $>$ and a closed dot for $\leq$ or $\geq$.

3. Determine the arrow direction

Less Than ($<$)

Shade the number line to the left.

Greater Than ($>$)

Shade the number line to the right for "less than" or right for "greater than".

TRANSLATING VERBAL PHRASES

Verbal Phrase	Math Symbol
At most; No more than	$\leq$
At least; No less than	$\geq$
Fewer than; Less than	$<$

Choose the correct answer for each question:

❖ Example 1:

1. Graph the solution set of $y > \frac{1}{2}$

A. A solid horizontal line at $y = \frac{1}{2}$ with shading below.

B. A dashed horizontal line at $y = \frac{1}{2}$ with shading below.

C. A dashed horizontal line at $y = \frac{1}{2}$ with shading above.

D. A solid horizontal line at $y = \frac{1}{2}$ with shading above.

❖ Example 2:

2. Write an inequality that represents the graph.

A. $x < -10$

B. $x \leq -10$

C. $x > -10$

D. $x \geq -10$



❖ Example 3:

3. Solve $-9 + b \leq 16$

A. $b \leq 7$

B. $b \geq 7$

C. $b \geq 25$

D. $b \leq 25$

❖ Example 4:

4. Select the solution set for $88 < x + 13$

A. $x < 75$
B. $x \leq 75$
C. $x \geq 75$
D. $x > 75$

❖ Example 5:

5. Write the solution set for $7x + 6 < 8x$

A. $x < 6$
B. $x > 6$
C. $x \leq 6$
D. $x \geq 6$

❖ Example 6:

6. DATA USAGE: HASSAN'S WIRELESS CONTRACT ALLOWS HIM TO USE AT MOST 5 GIGABYTES (GB) OF DATA PER MONTH. AT THIS POINT, HASSAN HAS USED 3.7 GB OF DATA. LET G BE THE NUMBER OF GIGABYTES THAT HASSAN HAS LEFT TO USE. WHICH INEQUALITY REPRESENTS THIS SITUATION?

A. $3.7 + g \geq 5$
B. $5 + g \leq 3.7$
C. $3.7 + g \leq 5$
D. $g - 3.7 > 5$

7. Solve the inequality $3.7 + g \leq 5$ to find how many gigabytes of data Hassan can use during the rest of the month.

A. $g \geq 1.3$	C. $g < 1.3$
B. $g \leq 1.3$	D. $g > 8.7$

❖ Example 7:

8. Part A: What inequality represents the situation in terms of x hours?
ELECTRIC CAR: For every hour x that Eva's electric car charges, she can drive the car 7.5 miles. Eva needs to drive at least 60 miles tomorrow.

A. $7.5x < 60$
B. $60x \leq 7.5$
C. $7.5x \geq 60$
D. $x + 7.5 \geq 60$

9. Part B: What is the least amount of time that Eva will need to charge her car?

What is the value in hours? ($7.5x \geq 60$)

A. 6 hours
B. 7 hours
C. 9 hours
D. 8 hours

❖ Example 8:

10. Solve $-\frac{2}{5}x \leq 11$. Graph the solution set on a number line.

- | |
|-------------------|
| A. $x \leq -27.5$ |
| B. $x < -27.5$ |
| C. $x > -27.5$ |
| D. $x \geq -27.5$ |

❖ Example 9:

11. Solve $7x > -161$

- | |
|-----------------|
| A. $x < -23$ |
| B. $x \leq -23$ |
| C. $x \geq -23$ |
| D. $x > -23$ |

❖ Example 10:

12. Select the solution set for $-13x > -169$

- | |
|--------------------|
| A. $\{x x > 13\}$ |
| B. $\{x x < 13\}$ |
| C. $\{x x > -13\}$ |
| D. $\{x x < -13\}$ |

❖ Practice:

13. Graph the solution set of each inequality.

$$x \leq -5$$

- | |
|--|
| A. A solid circle at -5 with an arrow pointing to the right. |
| B. An open circle at -5 with an arrow pointing to the left. |
| C. An open circle at -5 with an arrow pointing to the right. |
| D. A solid circle at -5 with an arrow pointing to the left. |

14. $y \geq -2$

- | |
|--|
| A. A solid circle at -2 with an arrow pointing to the right. |
| B. A solid circle at -2 with an arrow pointing to the left. |
| C. An open circle at -2 with an arrow pointing to the right. |
| D. An open circle at -2 with an arrow pointing to the left. |

15. $g > 5$

- | |
|---|
| A. A solid circle at 5 with an arrow pointing to the right. |
| B. An open circle at 5 with an arrow pointing to the right. |
| C. An open circle at 5 with an arrow pointing to the left. |
| D. A solid circle at 5 with an arrow pointing to the left. |

16. $h < -6$

- | |
|--|
| A. A solid circle at -6 with an arrow pointing to the left. |
| B. A solid circle at -6 with an arrow pointing to the right. |
| C. An open circle at -6 with an arrow pointing to the right. |
| D. An open circle at -6 with an arrow pointing to the left. |

17. $a < 7$

- | |
|---|
| A. An open circle at 7 with an arrow pointing to the left. |
| B. A solid circle at 7 with an arrow pointing to the left. |
| C. An open circle at 7 with an arrow pointing to the right. |
| D. A solid circle at 7 with an arrow pointing to the right. |

18. $b \leq 6$

- | |
|---|
| A. An open circle at 6 with an arrow pointing to the left. |
| B. A solid circle at 6 with an arrow pointing to the left. |
| C. A solid circle at 6 with an arrow pointing to the right. |
| D. An open circle at 6 with an arrow pointing to the right. |

19. Solve each inequality.

$$m - 4 < 3$$

A. $m \leq 7$

B. $m < 7$

C. $m > 7$

D. $m \geq 7$

20. $p - 6 \geq 3$

A. $p \leq 9$

B. $p < 9$

C. $p > 9$

D. $p \geq 9$

21. $r - 18 \leq -7$

A. $r \leq 15$

B. $r < 15$

C. $r > 15$

D. $r \geq 15$

22. $t - 3 > -8$

A. $t > -5$

B. $t < -5$

C. $t \leq -5$

D. $t \geq -5$

Lesson 2 – Solving Multi-Step Inequalities

دليل حل المتباينات الخطية متعددة الخطوات

توضيح الخطوات المتسلسلة والقواعد الأساسية لحل المتباينات الرياضية المعقدة وتحويل المسائل اللفظية إلى نماذج رياضية.



الخطوة الأولى: عزل حدود المتغير

استخدم الجمع أو الطرح لنقل الأعداد وعزل الحدود التي تحتوي على المتغير في جانب واحد.

$$3x + 5 > 11$$

$$3x > 11 - 5$$

$$3x > 6$$

$$x > 6 \div 3$$

$$x > 2$$

الخطوة الثانية: عزل المتغير تماماً

استخدم الضرب أو القسمة للتخلص من المعامل الملاصق للمتغير والحصول على قيمته النهائية.

$$3x > 6$$

$$x > 6 \div 3$$

$$x > 2$$

الخطوة الثالثة: التمثيل البياني

قم برسم الحل على خط الأعداد للتعبير عن مجموعة الحل بشكل بصري واضح.

$$x > 2$$

خطوات الحل المتسلسلة

مثال تطبيقي: ميزانية الطباعة

الوصف اللفظي	المكون الرياضي	المتباينة النهائية والحل
رسم ثابتة \$220 بالإضافة \$3 لكل نسخة، الميزانية القصوى المتاحة هي \$400.	$220 + 3x \leq 400$	$x \leq 60$ الحد الأقصى 60 كتاباً

تنبيهات وقواعد هامة



استخدام خاصية التوزيع

إذا احتوت المتباينة على أقواس، ابدأ بفكها باستخدام خاصية التوزيع قبل البدء بخطوات العزل.

حالات الحلول الخاصة

قد يكون الحل "مجموعة خالية" إذا كانت العبارة خاطئة، أو "جميع الأعداد الحقيقية" إذا كانت دائماً صحيحة.

قاعدة الأعداد السالبة

عند ضرب أو قسمة طرفي المتباينة في عدد سالب، يجب عكس اتجاه رمز المتباينة فوراً.

$$-2x < 10$$

$$x > -5$$

Mastering Multi-Step Inequalities

A systematic approach using inverse operations to isolate variables and the critical "sign-flip" rule for negative numbers.

1 THE CORE SOLVING PROCESS

1 Step 1: Isolate Variable Terms

Use addition or subtraction to move all variable terms to one side of the inequality.

$$3x + 5 > 11$$

$$3x > 6$$

2 Step 2: Isolate the Variable

Use multiplication or division to solve for the variable itself.

$$3x > 6$$

$$x > 2$$

ADVANCED TECHNIQUES & RESULTS

3 Apply the Distributive Property

Clear parentheses first by multiplying the outer term by everything inside before starting isolation.

$$2(x + 3) < 10$$

$$2x + 6 < 10$$

4 Special Solution Sets

Empty Set
False statements result in no solution (e.g., $5 < 2$).All Real Numbers
Always-true statements mean any real number works (e.g., $x > x - 1$).

INEQUALITY SYMBOL GUIDE

Phrase	Inequality Symbol	Graphing Note
"At most"	$\leq$	Closed circle, shade left
"No more than"	$\leq$	Closed circle, shade left
"Greater than"	$>$	Open circle, shade right
"At least"	$\geq$	Closed circle, shade right

! THE NEGATIVE NUMBER RULE

You **MUST** reverse the inequality symbol when multiplying or dividing both sides by a negative number.

$$-2x < 8$$

$$x > -4$$

REAL-WORLD BUDGETING

Use inequalities to find maximum quantities, such as how many books fit within a \$400 budget.

Book Cost: \$20
Budget: \$400

$$20b \leq 400$$

$$b \leq 20$$

Choose the correct answer for each question:

❖ Example 1:

1. TICKETS: Jamal has 40\$ to buy tickets to a performance for himself and his friends. If he buys a 10\$ membership, he can buy tickets for 5\$ each. How many tickets can he buy while remaining within his budget? If x represents the number of tickets Jamal purchases, write an inequality that represents the situation and solve it.

Part A: Write an inequality that represents the situation.

A. $5x - 10 \geq 40$

B. $10x + 5 \leq 40$

C. $5x + 10 \leq 40$

D. $5x + 10 > 40$

❖ Example 2:

2. Consider the inequality: The opposite of a number divided by two minus seventeen is less than seven.

Part A: Translate the sentence into an inequality.

A. $-\frac{x}{2} - 17 \geq 7$

B. $-\frac{x}{2} - 17 < 7$

C. $\frac{x}{2} - 17 > 7$

D. $-\frac{x}{2} + 17 < 7$

3. Part B: Solve the inequality.

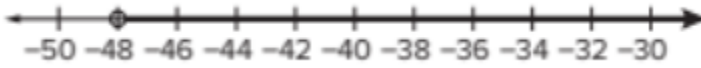
A. $x < -48$

B. $x \leq -48$

C. $x > -48$

D. $x \geq -48$

4. Part C: Graph the solution on a number line.



A. A solid circle at -48 with an arrow pointing to the left.

B. An open circle at -48 with an arrow pointing to the left.

C. A solid circle at -48 with an arrow pointing to the right.

D. An open circle at -48 with an arrow pointing to the right.

❖ Example 3:

5. Solve $88 \geq -33 + 11(x + 8)$. Then graph the inequality.

Part A: Solve the inequality.

A. $x \leq 3$

B. $x \geq 3$

C. $x \leq -3$

D. $x > 3$

6. Part B: Graph the inequality ($x \leq 3$)

- | |
|---|
| A. An open circle at 3 with an arrow pointing to the left. |
| B. A solid circle at 3 with an arrow pointing to the right. |
| C. An open circle at 3 with an arrow pointing to the right. |
| D. A solid circle at 3 with an arrow pointing to the left. |

7. Solve each inequality. Check your solution.

$$2(x - 4) \leq 2 + 3(x - 6)$$

- | |
|----------------|
| A. $x \leq -8$ |
| B. $x \geq 8$ |
| C. $x \leq 8$ |
| D. $x > 8$ |

8. $\frac{2x-4}{6} \geq -5x + 2$

- | |
|-------------------------|
| A. $x \geq \frac{1}{2}$ |
| B. $x \leq \frac{1}{2}$ |
| C. $x \geq 2$ |
| D. $x \geq \frac{1}{4}$ |

9. $0.7(2m - 5) \geq 21.7$

- | |
|----------------|
| A. $m \geq 18$ |
| B. $m \leq 18$ |
| C. $m > 18$ |
| D. $m < 18$ |

Lesson 3 – Solving Compound Inequalities

حل المتباينات المركبة: خطوات التميز الرياضي

المتباينة المركبة جملة رياضية تتكون من متباينتين أو أكثر متصتين بـ "و" (and) أو "أو" (or). يتطلب الحل فصل المتباينات، حل كل واحدة على حدة، وتمثيل الحل النهائي بيانياً لتحديد منطقة التقاطع أو الاتحاد.

حل متباينات "و" (التقاطع - Intersection)



المفهوم الأساسي

حل متباينات "أو" (الاتحاد - Union)



جدول مقارنة سريع: "و" مقابل "أو"

أداة الربط "أو" (Or) - الاتحاد (Union)	أداة الربط "و" (And) - التقاطع (Intersection)
المفهوم الرياضي: منطقتان منفصلتان	المفهوم الرياضي: منطقة متداخلة
شرط الصحة: تكفي صحة متباينة واحدة فقط	شرط الصحة: كلتا المتباينتين صحيحتين
الشكل البياني: سهمان متعاكسان	الشكل البياني: قطعة مستقيمة

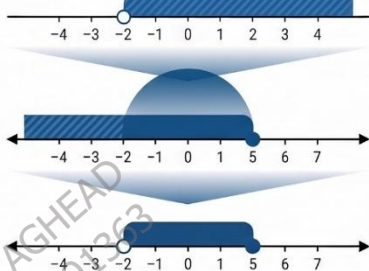
Compound Inequalities: Navigating Intersections and Unions

A compound inequality consists of two or more inequalities connected by the words "and" or "or." The solution involves solving each inequality individually and then graphing them on a single number line to find either their overlap (Intersection) or their combined set (Union).

Understanding the Logic

The "And" Intersection

True only when both inequalities are true; the graph shows where the two sets overlap.



Intersection: Overlapping region (Interval)

Inclusive vs. Exclusive

Within implies inclusive symbols ($\leq$, $\geq$), while Between implies exclusive symbols ($<$, $>$).

- Inclusive: $\leq$, $\geq$ (Closed/Filled Circle)
- Exclusive: $<$, $>$ (Open Circle)

3-Step Solution Process

$$-3 \leq 2x + 1 < 7$$

1. Separate the Inequalities

Rewrite the compound statement as two distinct inequalities joined by "and" or "or."

$$-3 \leq 2x + 1 \text{ AND } 2x + 1 < 7$$

2. Solve Independently

Use algebraic properties to isolate the variable for both parts of the statement.

$$-4 \leq 2x \text{ AND } 2x < 6$$

$$\Rightarrow -2 \leq x \text{ AND } \Rightarrow x < 3$$

3. Graph the Combined Set

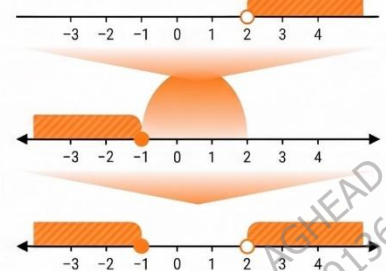
Plot both on one number line; shade the intersection for "and" or the union for "or."



Solution: $-2 \leq x < 3$

The "Or" Union

True if at least one inequality is true; the graph combines all points from both sets.



Union: Points from both directions (Split or All)

Choose the correct answer for each question:

❖ Example 1:

1. Solve $-7 \leq 3x + 2 \leq 5$. Then graph the solution set.

Part A: Solve the inequality.

A. $-3 \leq x \leq 1$

B. $3 \leq x \leq 1$

C. $-3 \leq x \leq -1$

D. $-1 \leq x \leq 3$

2. Part B: Graph the solution set $(-3 \leq x \leq 1)$.

A. An open circle at -3 and an open circle at 1 with a shaded line between them.

B. A solid circle at -3 and a solid circle at 1 with a shaded line between them.

C. A solid circle at -3 and an open circle at 1 with arrows pointing outward.

D. An open circle at -3 and a solid circle at 1 with arrows pointing outward.

❖ Example 2:

3. CARS: Keshawn has been saving to buy his first car. He wants the total cost of the car and fees to be more than 5000\$ but at most 7000\$. The fees for buying a used car, such as title, registration, and dealership fees, will be 700\$. Graph the list price of the cars Keshawn could buy.

Part A: Write a compound inequality for the list price x of the cars.

A. $5000 < x + 700 \leq 7000$

B. $5000 \leq x + 700 < 7000$

C. $5000 < x - 700 \leq 7000$

D. $5000 \leq x - 700 \leq 7000$

4. Part B: Solve the compound inequality to find the range of list prices (x).

A. $4300 \leq x \leq 6300$

B. $4300 < x < 6300$

C. $4300 < x \leq 6300$

D. $4300 \leq x < 6300$

5. Part C: Graph the solution on a number line.

A. An open circle at 4300 and a solid circle at 6300 with a shaded line between them.

B. A solid circle at 4300 and an open circle at 6300 with a shaded line between them.

C. An open circle at 4300 and an open circle at 6300 with a shaded line between them.

D. A solid circle at 4300 and a solid circle at 6300 with a shaded line between them.

❖ Example 3:

6. Solve $5x + 1 < 11$ or $-3x + 10 \leq -11$. Then graph the solution set.

Part A: Write the solution set for $5x + 1 < 11$ or $-3x + 10 \leq -11$

A. $x < 2$ or $x \leq 7$

B. $x < 2$ or $x \geq 7$

C. $x > 2$ or $x \leq 7$

D. $x > 2$ or $x \geq 7$

7. Part B: Graph of the solution set ($x < 2$ or $x \geq 7$)

A. An open circle at 2 with an arrow pointing to the left and a solid circle at 7 with an arrow pointing to the right.

B. A solid circle at 2 with an arrow pointing to the left and an open circle at 7 with an arrow pointing to the right.

C. An open circle at 2 and a solid circle at 7 with a shaded line between them.

D. A solid circle at 2 and an open circle at 7 with a shaded line between them.

❖ Example 4:

8. Solve $4m + 7 \leq 19$ or $-m + 5 \leq 0$. Then graph the solution set.

Part A: Select the solution set for $4m + 7 \leq 19$ or $-m + 5 \leq 0$

A. $m \geq 3$ or $m \leq 5$

B. $m \leq 3$ or $m \geq 5$

C. $m \geq 3$ or $m \geq 5$

D. $m \leq 3$ or $m \leq 5$

9. Part B: Graph of the solution set ($m < 3$ or $m \geq 5$)

- | |
|---|
| A. A solid circle at 3 with an arrow pointing to the right. |
| B. A solid circle at 3 with an arrow pointing to the left. |
| C. An open circle at 3 with an arrow pointing to the right. |
| D. A solid circle at 5 and a solid circle at 3 with a shaded line between them. |
| E. A+B |

❖ Example 5:

10. Write a compound inequality that describes the graph.



- | |
|----------------------|
| A. $7 < x < 9$ |
| B. $7 \leq x \leq 9$ |
| C. $7 < x \leq 9$ |
| D. $7 \geq x > 9$ |

❖ Example 6:

11. Write a compound inequality that describes the graph.



- | |
|------------------------------|
| A. $x \leq -1$ or $x \geq 1$ |
| B. $x < -1$ or $x > 1$ |
| C. $1 \leq x \leq 1$ |
| D. $-1 < x < 1$ |

❖ Practice:

12. Solve each compound inequality. Then graph the solution set.

$$f - 6 < 5 \text{ and } f - 4 \geq 4$$

A. $8 \leq f < 11$

B. $8 < f \leq 11$

C. $8 \leq f \leq 11$

D. $8 < f < 11$

13. $n + 2 \leq -5$ and $n + 6 \geq -6$

A. $-12 \leq n \leq -7$

B. $-12 < n < -7$

C. $-12 \leq n < -7$

D. $-12 < n \leq -7$

14. Write a compound inequality that describes each graph.



A. $-3 < x < 3$

B. $-3 \leq x < 3$

C. $-3 < x \leq 3$

D. $-3 \leq x \leq 3$

15.



A. $1 < x < 4$

B. $1 \leq x \leq 4$

C. $1 < x \leq 4$

D. $1 \leq x < 4$

16. Solve each compound inequality. Then graph the solution set.

$4 < f + 6$ and $f + 6 < 5$

A. $-2 < f < -1$

B. $-2 \leq f \leq -1$

C. $-2 < f \leq -1$

D. $-2 \leq f < -1$

17. $w + 3 \leq 0$ or $w + 7 \geq 9$

A. $w \leq -3$ or $w \geq 2$

B. $w < -3$ or $w > 2$

C. $w \leq -3$ or $w \leq 2$

D. $w \geq -3$ or $w \geq 2$

Lesson 4 – Solving Absolute Value Inequalities

الدليل الشامل لحل متباينات القيمة المطلقة

خارطة طريق الحل (خطوة بخطوة)

الخطوة 1: تقسيم المتباينة إلى حالتين.

$$|2x - 5| < 7$$

الحالة 2: عكس الإشارة
وعكس رمز المتباينة (سالب).
 $2x - 5 > -7$

الحالة 1: التعبير كما هو (موجب).
 $2x - 5 < 7$

الخطوة 2: حل كل متباينة بشكل منفصل.

$$2x - 5 > -7$$

$$2x - 5 < 7$$

الخطوة 3: دمج الحلول والتمثيل البياني.

$$x < 6 \quad \text{و} \quad x > -1$$



اربط الحلول بـ "و" أو "أو" ثم
مثلها على خط الأعداد بدوائر
مفتوحة أو مغلقة.

أنواع متباينات القيمة المطلقة وقواعدها

متباينات "أكبر من" ($>$ أو $\geq$)



تعني المسافة الأبعد.

تُكتب كمتباينة مركبة باستخدام أداة
الربط "أو" (or)، حيث يتجه الحل في
اتجاهين متعاكسين.

متباينات "أقل من" ($<$ أو $\leq$)



تعني المسافة الأقرب.

تُكتب كمتباينة مركبة باستخدام أداة
الربط "و" (and)، حيث يكون الحل
محصورًا بين قيمتين.

انتبه للقيم السالبة!

متباينة $|x| < \text{عدد سالب}$ ليس لها حل، بينما $|x| < \text{عدد سالب}$ حلها
"جميع الأعداد الحقيقية".

ملخص سريع: الرمز والربط والتمثيل

شكل التمثيل البياني	أداة الربط	الرمز
	و (and)	$x < \text{أو} x \leq$
	أو (or)	$x > \text{أو} x \geq$

A Step-by-Step Guide to Solving Absolute Value Inequalities

Absolute value inequalities represent the distance between a value and zero on a number line. To solve, account for two cases (non-negative and negative) and link results using specific logical connectors.

1. Set Up Two Separate Cases

Case 1: Keep As-Is

$$ax + b < c$$

Case 2: Multiply by -1

$$-(ax + b) < c$$

2. Solve and Reverse Symbols

Case 1

$$ax + b \leq c$$

Case 2

$$-(ax + b) \geq c$$

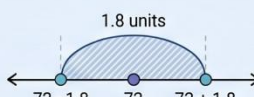
Caution: Reverse the inequality symbol when dividing or multiplying by -1.

3. Determine the Link (And vs. Or)

Symbol in Problem	Logic Link	Solution Set Type
$< \text{ or } \leq$	AND	Intersection (n-shaped)
$> \text{ or } \geq$	OR	Union (u-shaped)

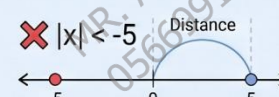
Logic & Special Conditions

Absolute Value as Distance



View $|x - 72| < 1.8$ as "the distance from x to 72 is less than 1.8 units."

Watch Out for Negative Distances



Inequalities like $|x| < -5$ have no solution because distance cannot be negative.

Choose the correct answer for each question:

❖ Example 1:

1. Solve $|6m+12| < 12$. Graph the solution set.

Part A: Solve the inequality.

A. $-4 < m < 0$

B. $-4 \leq m \leq 0$

C. $m < -4$ or $m > 0$

D. $-2 < m < 2$

2. Part B: Graph the solution set $(-4 < m < 0)$.

A. A solid circle at -4 and a solid circle at 0 with a shaded line between them.

B. An open circle at -4 and an open circle at 0 with a shaded line between them.

C. An open circle at -4 with an arrow pointing left and an open circle at 0 with an arrow pointing right.

D. A solid circle at -4 with an arrow pointing left and a solid circle at 0 with an arrow pointing right.

❖ Example 2:

3. Solve $|n - 1| < -5$. Then graph the solution set.

Part A: Solve the inequality.

A. No solution (Empty set, $\emptyset$)

B. All real numbers ($\mathbb{R}$)

C. $n < -4$

D. $n > 6$

4. Part B: Graph the solution set.

A. A number line with all numbers shaded.

B. A number line with nothing shaded (an empty graph with no points or lines).

C. A solid circle at -5 with an arrow pointing to the left.

D. An open circle at 1 with a shaded line between -5 and 1.

❖ Example 3:

5. Jonas is a software developer who wants to determine whether the changes he made to his program are popular with users. He finds that 72% of users like the changes, with a margin of error within 1.8%. Which inequality represents the actual percent x of users who like the changes?

A. $|x - 72| \leq 1.8$

B. $|x - 72| \geq 1.8$

C. $|x - 1.8| \leq 72$

D. $|x + 72| \leq 1.8$

6. By solving the compound inequality, what is the solution set that represents the actual percentage x of users who favor the changes?

A. $\{x | 70.2 \leq x \leq 73.8\}$

B. $\{x | 70.2 < x < 73.8\}$

C. $\{x | 72 \leq x \leq 73.8\}$

D. $\{x | 70.2 \leq x \leq 72\}$

❖ Example 4:

7. Part A: Solve $|4m - 20| \geq 12$

A. $2 \leq m \leq 8$

B. $m \leq 2$ or $m \geq 8$

C. $m \leq -8$ or $m \geq -2$

D. $-8 \leq m \leq -2$

8. Part B: Graph the solution set $m \leq 2$ or $m \geq 8$

- | |
|--|
| A. Solid circles at 2 and 8 with a shaded line between them. |
| B. Open circles at 2 and 8 with a shaded line between them. |
| C. A solid circle at 2 with an arrow pointing to the left and a solid circle at 8 with an arrow pointing to the right. |
| D. An open circle at 2 with an arrow pointing to the left and an open circle at 8 with an arrow pointing to the right. |

❖ Example 5:

9. Solve $|n - 6| \geq -5$. Then graph the solution set.

Part A: Solve the inequality.

- | |
|--------------------------------|
| A. All real numbers |
| B. No solution ($\emptyset$) |
| C. $1 \leq n \leq 11$ |
| D. $n \leq 1$ or $n \geq 11$ |

10. Part B: Graph the solution set.



- A. A number line with nothing shaded (an empty graph).
- B. A number line with a solid circle at 1 and a solid circle at 11 with a shaded line between them.
- C. A number line with all numbers shaded and arrows pointing in both directions.
- D. A solid circle at 6 with arrows pointing in both directions.

❖ Practice:

11. Solve each inequality. Then graph the solution set.

$$|x + 8| < 16$$

- A. $-24 < x < 8$
- B. $-24 \leq x \leq 8$
- C. $x < -24$ or $x > 8$
- D. $-8 < x < 24$

12. Solve each inequality. Then graph the solution set.

$$|r + 1| \leq 2$$

A. $-3 \leq r \leq 1$

B. $-3 < r < 1$

C. $r \leq -3$ or $r \geq 1$

D. $-1 \leq r \leq 3$

13. Solve each inequality. Then graph the solution set.

$$|2c - 1| \leq 7$$

A. $-3 \leq c \leq 4$

B. $-3 < c < 4$

C. $c \leq -3$ or $c \geq 4$

D. $-4 \leq c \leq 3$

14. Solve each inequality. Then graph the solution set.

$$|3h - 3| < 12$$

A. $-3 < h < 5$

B. $-3 \leq h \leq 5$

C. $h < -3$ or $h > 5$

D. $-5 < h < 3$

15. $|x - 2| \leq 3$

A. Matches Graph a

B. Matches Graph b

C. Matches a graph with open circles at
-1 and 5 with a shaded line between them

D. Matches a graph with open circles at
-2 and 2 with arrows pointing outward

Lesson 5 – Graphing Inequalities in Two Variables



يوضح هذا الدليل كيفية تمثيل مجموعة من المتباينة الخطية بيانياً، حيث يتم تقسيم المستوى الإحداثي إلى "نصفين" مستوى يفصل بينهما خط حدودي، مع تحديد المنطقة الصحيحة للحل من خلال اختبار النقاط.



دليل تمثيل المتباينات الخطية بيانياً

خطوات الحل الثلاث



الخطوة 3: تظليل منطقة الحل
ظلّل نصف المستوى الذي يحتوي النقطة إذا كانت النتيجة صحيحة. وإلا ظلّل الطرف الآخر.



الخطوة 2: استخدام نقطة اختبار
اختر نقطة لا تقع على الخط (مثل (0,0)) لتعويضها لتعويضها في المتباينة الأصلية.

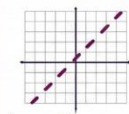


الخطوة 1: رسم الخط الحدودي
ارسم المتباينة كأنها معادلة خطية مع مراعاة نوع الخط (متصل أو متقطع).

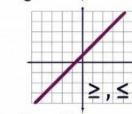
الخط الحدودي ونصف المستوى
الخط الحدودي مع حافة الرسم، ويقسم المستوى الإحداثي إلى منطقتين تسمى كل منهما "نصف مستوى".



متصل أم متقطع؟



استخدم خطاً متقطعاً للمتباينات ($>$, $<$).



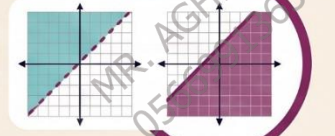
استخدم خطاً متصلاً للمتباينات ($\geq$, $\leq$).

المفاهيم الأساسية للتمثيل

منطقة الحل	نوع الخط الحدودي	الرمز الرياضي
نصف مستوى مفتوح	خط متقطع	$>$ أو $<$
نصف مستوى مغلق	خط متصل	$\geq$ أو $\leq$

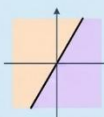
جدول مرجعي بصري

منطقة الحل (المغلقة والمفتوحة)
يكون نصف المستوى مغلقاً إذا تضمن الخط الحدودي. ومفتوحاً إذا لم يتضمنه.

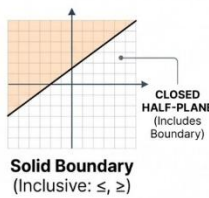


Mastering the Graph: Linear Inequalities in Two Variables

CORE CONCEPTS & VISUAL RULES



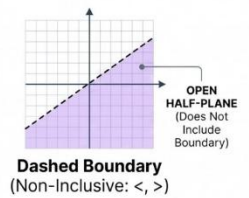
The boundary line divides the coordinate plane into two regions called half-planes.



Solid Boundary
(Inclusive: $\leq$, $\geq$)

VISUAL REPRESENTATION GUIDE

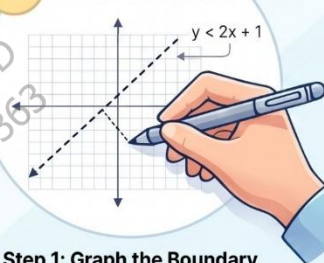
Inequality Symbol	Boundary Line Style	Half-Plane Type
$<$ or $>$	Dashed Line	Open Half-Plane
$\leq$ or $\geq$	Solid Line	Closed Half-Plane



Dashed Boundary
(Non-Inclusive: $<$, $>$)

3-STEP SOLUTION PROCESS

1

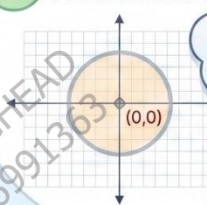


Step 1: Graph the Boundary

Treat the inequality as an equation to plot the line using the correct style.

2

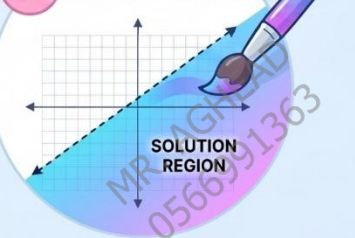
Pick a Test Point



Step 2: Pick a Test Point

Choose a point not on the line—ideally (0,0)—to check if it satisfies the inequality.

3



Step 3: Shade the Region

If the test point is a solution, shade its side; otherwise, shade the opposite side.

Choose the correct answer for each question:

❖ Example 1:

1. When solving for y to graph the boundary line of $3x - 2y < 8$, what is the resulting inequality equation?

A. $y < \frac{3}{2}x - 4$

B. $y > \frac{3}{2}x - 4$

C. $y < -\frac{3}{2}x + 4$

D. $y > -\frac{3}{2}x + 4$

2. When using the test point $(0,0)$ to determine which half-plane to shade, what is the resulting true/false statement after substitution and simplification?

A. $0 < 8$ (True)

B. $0 > 8$ (False)

C. $-8 < 8$ (True)

D. $8 < 8$ (False)

❖ Example 2:

3. Graph the inequalities.

What is the slope-intercept form of the boundary line and how should it be graphed?

$$2x + y < -4$$

A. $y < -2x - 4$ with a dashed boundary line.

B. $y > -2x - 4$ with a solid boundary line.

C. $y < -2x + 4$ with a dashed boundary line.

D. $y > -2x - 4$ with a dashed boundary line.

4. $x - 2y > -4$

What is the slope-intercept form after solving for y (remembering to reverse the inequality sign if dividing by a negative)?

A. $y < \frac{1}{2}x + 2$

B. $y > \frac{1}{2}x + 2$

C. $y < -\frac{1}{2}x + 2$

D. $y > -\frac{1}{2}x - 2$

❖ Example 3:

5. Dominique can spend up to \$20 on water bottles (x) costing \$0.80 each and sports drinks (y) costing \$1.25 each. Which inequality models this situation?

A. $0.8x + 1.25y \leq 20$

B. $0.8 + 1.25y \geq 20$

C. $1.25x + 0.8y \leq 20$

D. $0.8x - 1.25y \leq 20$

Words	\$0.80 times the number of bottles of water	plus	\$1.25 times the number of sports drinks	is less than or equal to	\$20
Variables	Let x = the number of bottles of water and y = the number of sports drinks that Dominique can buy.				
Inequality	$0.8 \cdot x$	+	$1.25 \cdot y$	$\leq$	\$20

6. When you solve the inequality $0.8x + 1.25y \leq 20$ for y, what is the resulting slope-intercept form?

A. $y \leq -0.64x + 16$

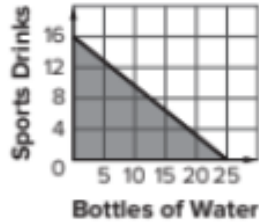
B. $y \geq -0.64x + 16$

C. $y \leq -0.8x + 16$

D. $y \leq 0.64x - 16$

7. Why are negative values of x and y excluded from the graph, and what makes a solution "viable" in this real-world context?

x	y
0	16
10	9.6
15	6.4
25	0



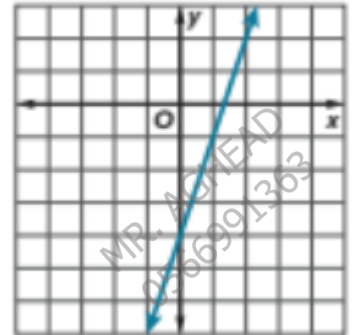
- A. Because Dominique cannot buy a negative number of drinks, and only whole-number combinations are practical/viable.
- B. Because negative numbers make the inequality false, and only fractional numbers are allowed.
- C. Because the boundary line must always pass through the origin (0,0).
- D. Because the total cost must always equal exactly \$0

❖ Example 4:

8. The graph of $y = 3x - 4$ is shown.

Consider the solutions of $y > 3x - 4$. Copy and complete the table to write each point in the appropriate column.

$(-5, -3)$	$(0, -4)$
$(1, -7)$	$(2, 2)$
$(-3, 4)$	$(0, 0)$
$(1, 1)$	$(4, 2)$



9. For the inequality $y < x - 3$

What is the nature of the boundary line and how should the half-plane be shaded?

- A. Dashed boundary line, shade the region that does not contain (0,0) (below the line).
- B. Solid boundary line, shade the region containing (0,0) (above the line).
- C. Dashed boundary line, shade the region containing (0,0).
- D. Solid boundary line, shade the region that does not contain (0,0).

10. For the inequality $y > x + 12$

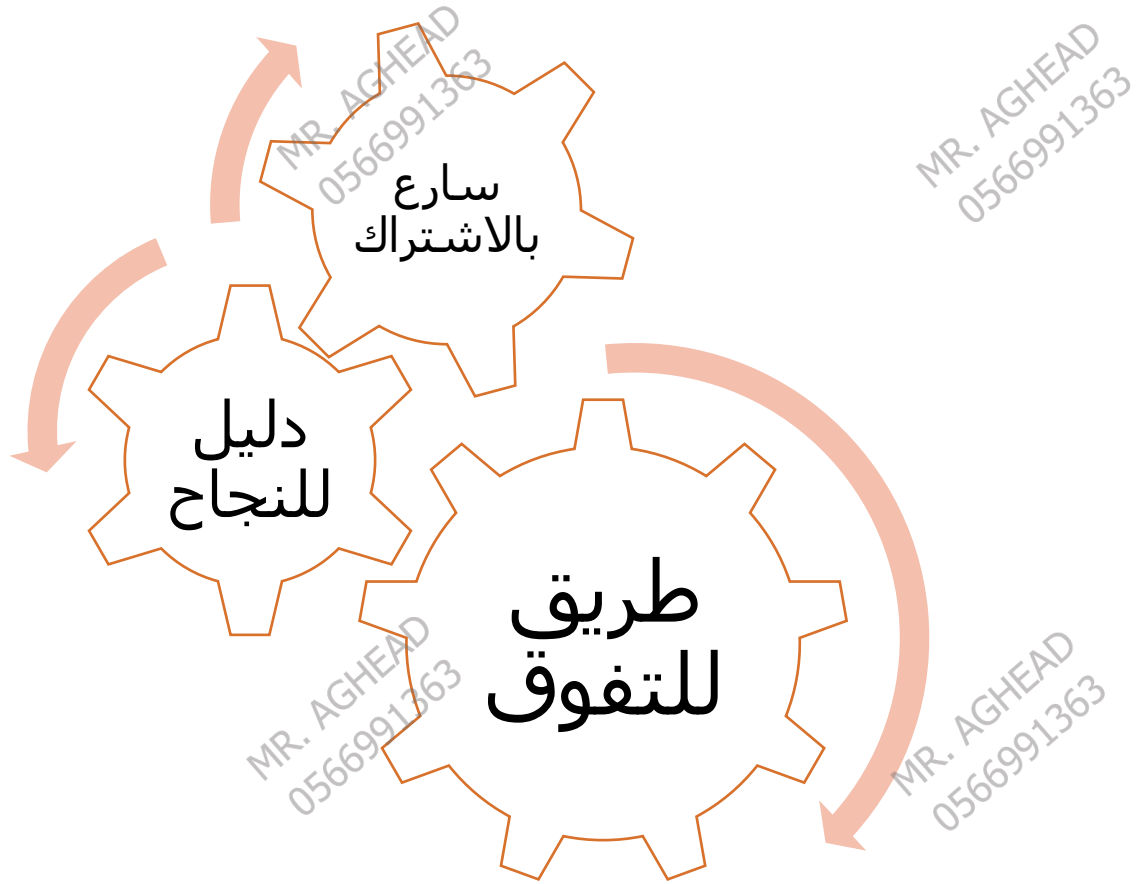
What are the slope, y-intercept, and boundary line type?

- A. Slope = 1, y-intercept = 12, dashed boundary line.
- B. Slope = 12, y-intercept = 1, solid boundary line.
- C. Slope = 1, y-intercept = -12, dashed boundary line.
- D. Slope = -1, y-intercept = 12, solid boundary line.

11. For the inequality $y \geq 3x - 1$

What type of boundary line should be drawn and which region should be shaded using the test point (0,0)?

- A. Solid boundary line, shade the half-plane containing (0,0) (since $0 \geq -1$ is true).
- B. Dashed boundary line, shade the half-plane containing (0,0).
- C. Solid boundary line, shade the half-plane that does not contain (0,0).
- D. Dashed boundary line, shade the half-plane that does not contain (0,0).



للحجز التواصل عبر الـ Whatsapp من خلال الضغط على الرقم:

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مع أطيب التمنيات بالنجاح والتوفيق ...
النهاية ...