

شرح درس جمع الأعداد الصحيحة



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رياضيات:

إعداد: نورا سيف

التواصل الاجتماعي بحسب الصف السابع



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف السابع والمادة رياضيات في الفصل الأول

شرح درس طرح الأعداد الصحيحة مع أمثلة توضيحية

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جداول العلاقات التناسبية

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حساب الضرائب والتكلفة الإجمالية

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النسب المئوية والتقدير

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تحميل تطبيق المناهج للهواتف الذكية

تطبيق المناهج على Play Google (أندرويد)

تطبيق المناهج على Store App (آبل)



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خبراء التعليم

أقوى منصة تعليمية

معاً.. نحو مستقبل أفضل

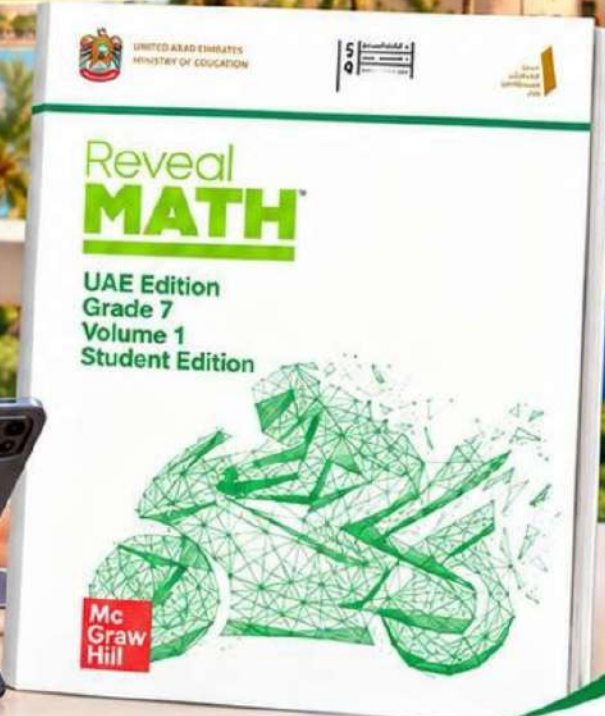


MATH

Grade 7

Lesson 3-1

Add Integers



الواتس اب QR



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Lesson 3-1

Add Integers

تعالى معنا
نفهم

I Can...

I can use different methods, including algebra tiles, number lines, or absolute value, to add integers.



Key Vocabulary

- additive inverse
- Additive Inverse Property
- opposites



Explore

Use Algebra Tiles to Add Integers

You can use algebra tiles to model addition of integers. Each yellow tile represents +1 and each red tile represents -1.

$$\begin{array}{c} \text{Red tiles} \\ \text{---} \end{array} + \begin{array}{c} \text{Red tiles} \\ \text{---} \end{array} = \begin{array}{c} \text{Red tiles} \\ \text{---} \end{array}$$

-3 -4 -7

When we add integers with the **same sign**, we combine their **absolute values** and keep the **same sign**.



Learn

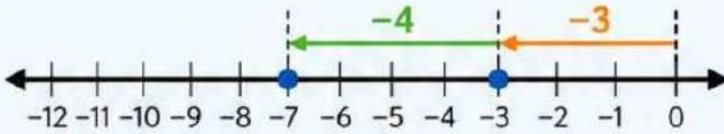
Add Integers with the Same Sign

هيا بنا

To add two integers with the **same sign**, add their **absolute values** and keep the **same sign**.

Example 1: $-3 + (-4) = -7$

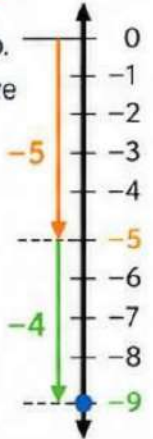
Use a horizontal number line. Start at zero. Move left 3 units to -3. Then move left 4 units to -7. The sum is -7.



$$-3 + (-4) = -7$$

Example 2: $-5 + (-4) = -9$

Use a vertical number line. Start at zero. Move down 5 units to -5. Then move down 4 units to -9. The sum is -9.



$$-5 + (-4) = -9$$



Quick Check

قيم فهمك

1 What is $-6 + (-2)$?

- A 8 B -8 C -4 D 4

2 What is $-7 + (-5)$?

- A 12 B -12 C -2 D 2



تواصل واتس اب

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1

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Lesson 3-1

Examples 1 & 2

Add Integers with the Same Sign



تعالى معنا
نفهم



Key Rule

To add integers with the **same sign**, add their **absolute values** and keep the **same sign**.

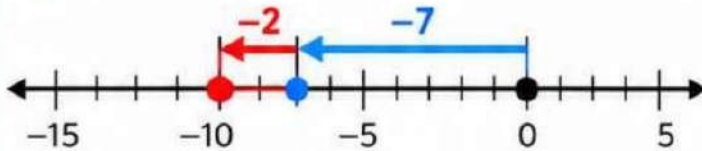
- The sum is positive if both integers are positive.
- The sum is negative if both integers are negative.

Example 1

Find $-7 + (-2)$.

Method 1 Use a number line.

- Start at zero. Move left 7 units to model -7 .
- Then move left 2 units to model adding -2 .
- The sum is -9 .



$$-7 + (-2) = -9$$

Method 2 Use the absolute value.

- Because the integers have the same sign, find the sum of the absolute values.

$$|-7| = 7 \text{ and } |-2| = 2$$

- The sum of their absolute values is $7 + 2$ or 9 .
- Because both integers are negative, the sum will be negative.

$$\text{So, } -7 + (-2) = -9.$$

Check

Find the sum of $-5 + (-11)$.

Example 2

Allie borrowed \$139 from her parents to purchase an ebook reader. During the first month, she purchased \$47 in apps, games, and movies which was added to the amount she already owed her parents.



What integer represents the amount of money Allie had at the end of the first month?

- The addition expression $-139 + (-47)$ represents the amount of money Allie had at the end of the month.
- Because the integers have the same sign, find the sum of the absolute values.

$$|-139| = \boxed{} \text{ and } |-47| = \boxed{}$$

- The sum of their absolute values is $139 + 47$ or $\boxed{}$.
- Because both integers are negative, the sum will be $\boxed{}$.

So, the amount of money Allie has is -186 .

Check

A contestant on a game show has $-1,500$ points. He loses another 750 points. What is his new score?

هيا بنا





Lesson 3-1

Learn Find Additive Inverses

تعالى معنا
نفهم



I Can...

I can find additive inverses of integers and use them to understand that their sum is zero.



Learn

- Opposites have the **same absolute value** but **different signs**.
- Two integers that are opposites are called **additive inverses**, and their sum is **zero**.
- The **Additive Inverse Property** can be used to find additive inverses.

Algebra Form

$$a + (-a) = 0$$

Example

The integers $+a$ and $-a$ are opposites. They have the same absolute value but different signs. So, they are additive inverses, and their sum is zero.

$$4 + (-4) = 0$$



Talk About It!

Which number is its own additive inverse? Explain.



Explore

Complete the table showing integers and their additive inverses.

Integer	Additive Inverse	Sum
-1	1	0
2	-2	0
-3	3	0
-4	4	0
5	-5	0



Pause and Reflect

Are you ready to move on to the next Example? If yes, what have you learned that you think will help you? If no, what questions do you still have? How can you get those questions answered?

Record your observations here

جرب بنفسك





Lesson 3-1

Add Integers

تعالى معنا
نفهم

Example 3

Find Additive Inverses

A hiking trail begins at an elevation of 150 feet above sea level. It leads down to the shore of the ocean, which has an elevation of 0 feet above sea level.

What integer represents the change in the elevation of the trail from beginning to end?

The change is the additive inverse of 150, which is .



Key Vocabulary

- additive inverse
- opposites
- absolute value
- integer



Check

A puffin is flying at 29 feet above sea level.

What integer represents the elevation, in feet, that it will have to fly to reach sea level? feet



Learn

Add Integers with Different Signs

When adding two integers with **different signs**:

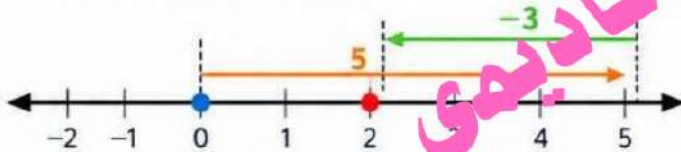
- 1** Subtract their **absolute values**.
- 2** Keep the **sign** of the number with the **greater absolute value**.

When the signs are different, **subtract** the **absolute values** and keep the sign of the number with the **greater absolute value**.

Horizontal Number Line

$$5 + (-3) = 2$$

Start at zero. Move right 5 units, then move left 3 units. The sum is 2.

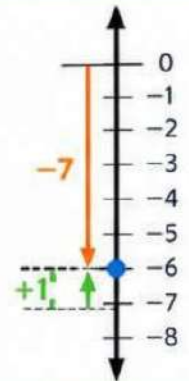


$$5 + (-3) = 2$$

Vertical Number Line

$$-7 + 1 = -6$$

Start at zero. Move down 7 units, then move up 1 unit. The sum is -6.



$$-7 + 1 = -6$$



Example 4

Add Integers with Different Signs

Find $11 + (-4)$.

Method 1 Use a number line.

Start at zero. Move right 11 units, then move left 4 units. The sum is 7.



$$11 + (-4) = 7$$

Method 2 Use absolute values.

Because the integers have different signs, find the difference of the absolute values.

$$|11| = \square \text{ and } |-4| = \square$$

The difference is $11 - 4 = 7$.

Since $|11| > |-4|$, the sum has the same sign as $\square$.

$$\text{So, } 11 + (-4) = \square$$

Check

Find the sum of $10 + (-22)$.

$$10 + (-22) = \square$$





Lesson 3-1

Example 5

Add Integers with Different Signs

تعالى معنا
نفهم

Explore

A Whale in the Ocean

A whale swam at a depth of 275 feet below the surface of the ocean. After 10 minutes, it rose 194 feet.



I Can...

Find the new location of the whale using addition of integers with different signs.



Learn

Solve the Problem

1 Find the absolute values.

Because the integers have different signs, find the difference of the absolute values.

$$|-275| = \boxed{} \text{ and } |194| = \boxed{}$$

3 Determine the sign.

Because $|-275| > |194|$, the sum will have the same sign as $\boxed{}$.

2 Find the difference.

The difference of their absolute values is $275 - 194$ or $\boxed{}$.

4 Write the answer.

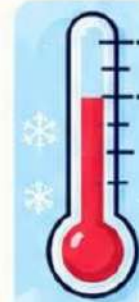
So, the integer that describes the whale's location in feet, is $\boxed{}$. This means the whale is $\boxed{}$ feet below the ocean's surface.



Check Your Understanding

At 5:00 P.M., a thermometer shows an outside temperature of 2°F . Then, over the next three hours, the temperature drops 11°F . Which integer represents the thermometer reading, in degrees, at 8:00 P.M.?

$$\boxed{}^{\circ}\text{F}$$



2°F
at 5:00 P.M.

drops
 11°F

$?^{\circ}\text{F}$
at 8:00 P.M.



Pause and Reflect

When you first saw this Example, what was your reaction? Did you think you could solve the problem? Did what you already know help you solve the problem?



Record your
thoughts here





Lesson 3-1

Example 6

Add Three or More Integers

تعالى معنا
نفهم

I Can...

Add three or more integers using different methods, including adding in order and grouping like signs.



Key Vocabulary

- Commutative Property
- like signs
- additive inverse
- an expression



Explore

Find $-26 + 74 + (-14)$.

Method 1 Add the numbers in order.

$$-26 + 74 + (-14)$$

Write the expression.

$$= \boxed{} + (-14)$$

Add $-26 + 74$.

$$= \boxed{}$$

Add $48 + (-14)$.

Method 2 Group like signs together.

$$-26 + 74 + (-14)$$

Write the expression.

$$= -26 + (\boxed{}) + \boxed{}$$

Use the Commutative Property.

$$= \boxed{} + 74$$

Add $-26 + (-14)$.

$$= \boxed{}$$

Add.



Note

When adding three or more integers, you can group **like signs** together (using the Commutative Property). Add their **absolute values** and keep the **same sign**.

Solution

So, the sum of $-26 + 74 + (-14)$ is **34**.

Check

Find $-14 + 5 + (-6)$.Show
your work
here.

Quick Check

قيم فهمك

1 What is $-12 + 7 + (-5)$?

- A -10 B -7 C 0 D 10

2 What is $-8 + (-6) + 4$?

- A -18 B -10 C -2 D 2





Lesson 3-1

Add Integers

تعالى معنا
نفهم

Example 7

Add Three or More Integers

A roller coaster starts at point A, 43 feet above the ground. It ascends 55 feet, descends 80 feet, then ascends 110 feet to point B.

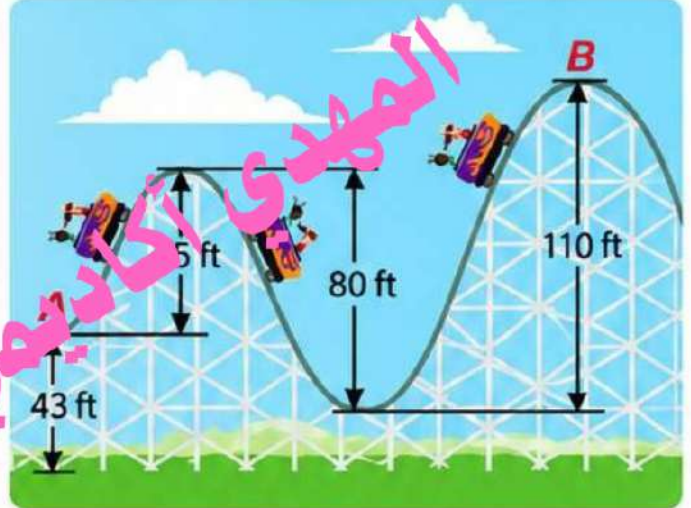


What is the height of the roller coaster at point B in relation to the ground?

Ascending can be represented by a positive integer and descending can be represented by a negative integer. So, the addition expression

$$43 + 55 + (-80) + 110$$

models the situation.



Solve It

$$\begin{aligned} 43 + 55 + (-80) + 110 &= 43 + 55 + 110 + (-80) \\ &= 98 + 110 + (-80) \\ &= 208 + (-80) \\ &= 128 \end{aligned}$$

Commutative Property of Addition

Add 43 + 55.

Add 98 + 110.

Add 208 + (-80).



Answer

Point B is 128 feet above the ground.



Check

An unmanned submarine is doing test runs along the ocean bottom. The following table shows the change in the depth of the submarine each minute for 4 minutes.

Minute	Change in Depth (ft)
1	-150
2	162
3	-175
4	-180



What is the total change in depth of the submarine after 4 minutes?

Write your answer as an integer.



Foldables / Review

Operations with Integers

Use your Foldable to review the four operations with integers.

add

subtract

multiply

divide





Lesson 3-1

Practice

Add Integers

تعالى معنا
نفهم

I Can...

add integers using algebra tiles, number lines, or absolute values.



Key Vocabulary

- additive inverse
- absolute value
- same sign
- opposites



Practice

Find the sum.



1 $-3 + (-8)$

2 $-11 + (-3)$

3 $9 + (-35)$

4 $-28 + 14$

5 $-22 + (-10) + 15$

6 $18 + (-12) + 5$

7 Roger owes his father \$15. He borrows another \$25 from him. What integer represents the balance that he owes his father?



8 A football team lost 14 yards on their first play then lost another 7 yards on the next play. What integer represents the total change in yards for the two plays?



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8

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Lesson 3-1

Practice

Word Problems & Test Practice

تعالى معنا
نفهم

- 9 Kwan's beginning account balance was \$20. His ending balance is \$0. What integer represents the change in his account balance from beginning to end?

- 10 Lucy's dog lost 6 pounds. How much weight does her dog need to gain in order to have a net change of 0 pounds?

- 11 The table shows Jewel's scores for the first 9 holes and the second 9 holes of her game of golf. What integer represents her score for the entire game?

Holes	Score
1-9	3 over par
10-18	4 under par

- 12 At 4:00 A.M., the outside temperature was -28°F . By 4:00 P.M. that same day, it rose 38 degrees. What integer represents the temperature at 4:00 P.M.?

- 13 In 20 seconds, a roller coaster goes up a 100-meter hill, then down 72 meters, and then back up a 48-meter rise. How much higher or lower from the start of the ride is the coaster after the 20 seconds?

- 14 **Open Response** Joe opened a bank account with \$80. He then withdrew \$35 and deposited \$115. What is his account balance after these transactions?

Quick Check

قيم فهمك

- 1 What is $-6 + (-2)$?

A 8 B -8 C -4 D 4

- 2 What is $-7 + (-5)$?

A 12 B -12 C -2 D 2



Lesson 3-1

Apply

معًا
تطبق ما تعلمناه



15



Real-World

The table shows the transactions for one week for Tasha and Jamal. Who has the greater account balance at the end of the week? How much greater?

Transactions	Tasha	Jamal
Initial Deposit	\$250	\$200
Withdrawals	\$20	\$60
Deposits	\$65	\$50
Debit Card Purchases	\$46	\$27



16



Problem Solving

A hot air balloon rises 40 feet into the air. Then it descends 130 feet, goes up 80 feet, and then down another 45 feet. How many feet will the balloon need to travel to return to the ground? Represent this amount as an integer. Explain.



17



Algebra

What value of x would result in the numerical value of zero for each expression?

a. $-10 + 11 + x$

b. $7 + x + (-10)$

c. $x + 1 + (-1)$

18



Reasoning

Find a counterexample. Patrick stated that the sum of a positive integer and a negative integer is always negative. Find a counterexample that illustrates why this statement is not true.



19



Justify

Explain how you know that the sum of 2, 3, and -2 is positive without computing.



20



Create

Write and solve a real-world problem where you add three integers and the sum is negative.





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