Grade 2 Mathematics

رياضيات الصف الثاني

A Bilingual Learning Guide for Absolute Beginners

دليل تعلّم ثنائي اللغة للمبتدئين تمامًا

From Zero to Ready-to-Teach

من الصفر إلى الاستعداد للتدريس

7 Units • 22 Modules • Real-Life Connections

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Introduction / مقدمة

Welcome to your Grade 2 Mathematics Bilingual Learning Guide! This guide is designed for absolute beginners who want to understand math from the very beginning and become ready to teach it. Every concept is explained step by step, with Arabic translations and real-life examples to help you connect math to the world around you.

مرحبًا بكم في دليل تعلّم رياضيات الصف الثاني! هذا الدليل مصمم للمبتدئين تمامًا الذين يريدون فهم الرياضيات من البداية والاستعداد لتدريسها.

Who Founded Mathematics? / من أسس الرياضيات؟

Mathematics was not founded by one single person. It developed over thousands of years across many civilizations. The Babylonians (about 4000 years ago in modern-day Iraq) created one of the first number systems and used math for astronomy and trade. The Ancient Egyptians used geometry to build the pyramids and measure land after the Nile flooded. They needed math to calculate areas and volumes with amazing accuracy.

The Greeks made huge contributions. Pythagoras (about 2500 years ago) discovered famous rules about triangles that we still use today. Euclid wrote a book called 'The Elements' that organized all math knowledge and is still referenced after 2300 years. Archimedes calculated the value of pi and invented many mathematical tools.

Indian mathematicians invented the most important number in math: zero! They also created the decimal system (0-9) that the whole world uses today. Arab and Islamic mathematicians preserved and advanced this knowledge. Muhammad ibn Musa al-Khwarizmi (about 1200 years ago) is called the Father of Algebra. The word 'algorithm' comes from his name! His work allows computers to function today. Another Arab mathematician, Omar Khayyam, solved cubic equations. Without these mathematicians, we would not have computers, engineering, or modern science.

الرياضيات لم يؤسسها شخص واحد. البابليون أنشأوا أول نظام عد. المصريون القدماء استخدموا الهندسة لبناء الأهرامات.

اليونان مثل فيثاغورس وإقليدس قدموا إسهامات عظيمة. الرياضيون الهند اخترعوا الصفر والنظام العشري. والعالم العربي الخوارزمي هو أبو الجبر — وكلمة algorithm مشتقة من اسمه!

لماذا نتعلم الرياضيات؟ / Why Do We Learn Math?

Math is everywhere in our daily lives! When you buy groceries, you use addition and subtraction. When you cook, you measure ingredients. When you tell time, you use numbers. Doctors use math to give the right medicine doses. Engineers use math to build bridges and buildings. Shopkeepers use math to calculate prices and change. Without math, we could not build houses, tell time, share food fairly, or use phones and computers. Learning math opens doors to every career and helps you make better decisions every day. Every great civilization that advanced in science and technology first advanced in math!

How to Use This Guide / كيف تستخدم هذا الدليل

1. Read each section in order — each concept builds on the previous one.
2. Green boxes contain Arabic translations of key terms and concepts.
3. Teal boxes explain WHY we learn each topic and how math connects to real life.
4. Blue boxes contain real-life examples from everyday Egyptian life.
5. Orange boxes contain important warnings and key points to remember.
6. Take your time with each module. There is no rush!

Unit 1: Numbers to 20 and Data

الوحدة الأولى: الأعداد حتى 20 والبيانات

Module 1: Fluency for Addition and Subtraction Within 20

الموديول الأول: الإتقان في الجمع والطرح ضمن 20

In Grade 1, you learned the basics of addition and subtraction. Now in Grade 2, you need to become fluent — meaning you can solve addition and subtraction problems within 20 quickly and accurately, without having to count on your fingers every time. Fluency comes from practice and understanding strategies. Think of it like learning to read: first you sound out each letter, then you read whole words automatically. The same happens with math facts!

الترجمة العربية

Fluency

يعني الإتقان — أن تحل مسائل الجمع والطرح بسرعة ودقة دون الحاجة للعد على أصابعك كل مرة.

Key Vocabulary

Fluency إتقان — solving math facts quickly and correctly

Addition fact حقيقة جمع — an addition equation with an answer you memorize

Subtraction fact حقيقة طرح — a subtraction equation with an answer you memorize

Strategies for Fluency

There are several strategies to help you become fluent with addition and subtraction within 20: (1) Counting On: for 8 + 5, start at 8 and count 9, 10, 11, 12, 13. (2) Making a Ten: for 8 + 5, think 8 + 2 = 10, then 10 + 3 = 13. (3) Using Doubles: for 7 + 8, think 7 + 7 = 14, so 7 + 8 = 15. (4) Using Related Facts: if you know 9 + 6 = 15, then you also know 15 - 6 = 9 and 15 - 9 = 6. Practice each strategy until you find the one that works best for you!

لماذا نتعلم الجمع والطرح؟ / Why Learn Addition and Subtraction?

Every time you go to the store and buy more than one item, you add prices. When you pay and get change, you subtract. A carpenter adds measurements to cut wood correctly. A baker subtracts used ingredients from the inventory. Even a football coach adds up points to know the score! If you can add and subtract fluently within 20, you can handle money, measure things, and solve problems faster in your daily life.

مثال من الحياة / Everyday Example

إذا اشتريت كتاب بـ 7 جنيهات ودفتر بـ 5 جنيهات، كم تدفع؟ 7 + 5 = 12 جنيهًا.

إذا أعطيت البائع 20 جنيهًا، كم الباقي؟ 20 - 12 = 8 جنيهات.

Module 2: Equal Groups

الموديول الثاني: المجموعات المتساوية

Even and Odd Numbers / الأعداد الزوجية والفردية

An even number is a number that can be divided into two equal groups with nothing left over. For example, 8 is even because you can make 2 groups of 4. An odd number has one left over when you try to divide it into two equal groups. For example, 7 is odd because you get 2 groups of 3 with 1 left over. You can also think of it this way: even numbers end in 0, 2, 4, 6, or 8, and odd numbers end in 1, 3, 5, 7, or 9. Even numbers can be written as doubles: 6 = 3 + 3, 10 = 5 + 5.

Even زوجي — can be split into 2 equal groups

Odd فردي — has one left over when split into 2 groups

Array مصفوفة — objects arranged in rows and columns

Arrays and Repeated Addition

An array is a rectangular arrangement of objects in rows and columns. For example, 3 rows of 4 stars is an array. You can find the total by adding: 4 + 4 + 4 = 12. This is called repeated addition. You write it as 3 groups of 4, which equals 12. Arrays are the foundation for multiplication, which you will learn in Grade 3. For now, think of arrays as organized groups that help you count efficiently instead of counting one by one.

لماذا نتعلم المجموعات المتساوية؟ / Why Learn Equal Groups?

Equal groups are everywhere! When you set a table with 4 plates in each of 3 rows, that's an array: 4 + 4 + 4 = 12 plates. When eggs come in a carton with 2 rows of 6, that's 6 + 6 = 12 eggs. Understanding equal groups prepares you for multiplication, which builders, farmers, and shopkeepers use every day. A farmer who plants 5 rows of 8 seeds uses repeated addition: 8 + 8 + 8 + 8 + 8 = 40 seeds!

مثال من الحياة / Everyday Example

في الفصل هناك 5 صفوف من المقاعد، كل صف فيه 4 طلاب. كم عدد الطلاب؟ 4 + 4 + 4 + 4 + 4 = 20 طالبًا. هذا هو الجمع المتكرر!

Module 3: Data

الموديول الثالث: البيانات

Data means information we collect and organize. In Grade 2, you learn to collect data through surveys, record it in tally charts, and display it in picture graphs and bar graphs with up to 4 categories. A survey is when you ask people a question and record their answers. For example, you might ask your classmates: 'What is your favorite fruit?' Then you record each answer and create a graph to show the results. Graphs help us see patterns and make decisions.

Survey استبيان — asking people questions to collect data

Data بيانات — information collected from observations or surveys

Key مفتاح — tells what each picture represents in a picture graph

Collecting and Recording Data

When you conduct a survey, you need to: (1) Choose a question, like 'What is your favorite color?' (2) Give answer choices: red, blue, green, yellow. (3) Ask each person and record their answer using tally marks. (4) Count the tallies to find how many chose each option. A tally chart uses marks: |||| means 4, and |||| with a slash through means 5. Tally charts are a quick way to record data as you collect it.

Picture Graphs and Bar Graphs

A picture graph uses pictures or symbols to show data. Each picture stands for one vote or item. A key tells you what each picture means. For example, if the key says each apple = 1 student, and there are 5 apples next to 'Red', then 5 students chose red. A bar graph uses bars of different lengths. Each bar represents a category, and the length shows how many. Bar graphs make it easy to compare: the longest bar has the most, the shortest has the least.

Why Learn Data? / لماذا نتعلم البيانات؟

Data is everywhere! Doctors use data to decide which medicine works best. Business owners use data to know what products to sell. Teachers use data to see what students need help with. Even sports teams use data to choose the best players! When you read a graph in the newspaper about weather, prices, or election results, you are using data skills. Learning to collect and interpret data helps you make smart decisions based on evidence, not just guessing.

Everyday Example / مثال من الحياة

اسأل زملاءك: ما وجبتك المفضلة؟ كشري / فول / ملوخية / رز. سجل الإجابات في جدول عد، ثم ارسم رسمًا بيانيًا. الطعام الأكثر شعبية هو ذي العمود الأطول!

Key Point / نقطة مهمة

Always label your graphs! A graph without a title and category labels is like a map without street names — it doesn't tell you anything useful. Make sure every graph has: a title, category labels, and a key (for picture graphs) or a number scale (for bar graphs).

Unit 2: Place Value

الوحدة الثانية: قيمة المنزلة

Module 4: Understand Place Value

الموديول الرابع: فهم قيمة المنزلة

In Grade 1, you learned about tens and ones for numbers up to 120. Now in Grade 2, you extend this to three-digit numbers up to 1,000 by adding the hundreds place. A three-digit number like 345 has 3 hundreds (300), 4 tens (40), and 5 ones (5). So 345 = 300 + 40 + 5. The position of each digit determines its value — this is place value. The digit 3 in 345 means 300, but the digit 3 in 35 means 30, and the digit 3 in 3 means just 3. Position is everything!

Hundreds المئات — the place worth 100

Expanded Form الكتابة المفصلة — writing a number as the sum of its place values, e.g., 345 = 300 + 40 + 5

Number Name اسم العدد — writing a number in words, e.g., three hundred forty-five

لماذا نتعلم قيمة المنزلة؟ / Why Learn Place Value?

Place value is the backbone of all mathematics! When you read a price tag of 350 pounds, you need to know that's 3 hundreds, not just 3. When you dial a phone number, each digit's position matters. When a pharmacist reads a dosage of 125 mg, confusing the hundreds and tens could be dangerous! Understanding place value helps you read, write, compare, and calculate with any number, no matter how large.

مثال من الحياة / Everyday Example

سعر الجوال 475 جنيهًا. هذا يعني 4 مئات + 7 عشرات + 5 آحاد = 400 + 70 + 5. لو قرأته خطأ كـ 457 لأصبح السعر مختلف! قيمة المنزلة تجعلنا نقرأ الأرقام بشكل صحيح.

Module 5: Read, Write, and Show Numbers to 1,000

الموديول الخامس: قراءة وكتابة وعرض الأعداد حتى 1000

Numbers can be written in different ways: Standard Form (345), Expanded Form (300 + 40 + 5), and Number Name (three hundred forty-five). All three represent the same number. Being able to switch between these forms helps you understand numbers deeply. When writing number names, do NOT use the word 'and' — 345 is 'three hundred forty-five', not 'three hundred AND forty-five'. This is important because later, when you learn about decimals, the word 'and' will mark the decimal point.

نقطة مهمة / Key Point

Do NOT say 'and' when reading whole numbers! 506 is 'five hundred six', not 'five hundred and six'. The word 'and' is reserved for decimal points in later grades.

Module 6: Use Place Value

الموديول السادس: استخدام قيمة المنزلة

Counting Patterns

You can count within 1,000 by different amounts: by 1s (247, 248, 249, 250...), by 5s (245, 250, 255, 260...), by 10s (240, 250, 260, 270...), and by 100s (200, 300, 400, 500...). These patterns help you count quickly and understand how numbers relate to each other. You can also find 10 more or 10 less than any number: 10 more than 345 is 355, and 10 less than 345 is 335. Similarly, 100 more than 345 is 445, and 100 less is 245.

Comparing Three-Digit Numbers

To compare two three-digit numbers, follow these steps: (1) Compare the hundreds digit first. The number with more hundreds is bigger. 523 > 423 because 5 hundreds > 4 hundreds. (2) If the hundreds are the same, compare the tens. 543 > 523 because 4 tens > 2 tens. (3) If both hundreds and tens are the same, compare the ones. 527 > 523 because 7 ones > 3 ones. Use the symbols > (greater than), < (less than), and = (equal to) to compare.

لماذا نقارن الأعداد؟ / Why Compare Numbers?

Comparing numbers is something you do every day! Which is more: 350 pounds or 275 pounds? Which distance is shorter: 480 km or 510 km? Which class has more students: 327 or 318? When you compare prices at the market, distances on a map, or scores in a game, you are comparing numbers. This skill helps you make better choices and understand which option is bigger, smaller, or the same.

Unit 3: Money and Time

الوحدة الثالثة: النقود والوقت

Module 7: Coins

الموديول السابع: العملات المعدنية

In Grade 2, you learn about the four main U.S. coins: penny (1 cent), nickel (5 cents), dime (10 cents), and quarter (25 cents). Each coin has a different value, and you need to know these values to count money. A key rule: the size of a coin does NOT tell you its value! A dime is the smallest coin but is worth more than a nickel or penny. To count a group of coins, start with the coin that has the highest value and add on. For example, 1 quarter + 2 dimes + 1 nickel = 25 + 10 + 10 + 5 = 50 cents.

Penny (بنس (1 سنت) — 1 cent, copper colored

Nickel (نيكل (5 سنت) — 5 cents, larger than penny

Dime (دايم (10 سنت) — 10 cents, smallest coin

Quarter (كوارتر (25 سنت) — 25 cents, largest common coin

لماذا نتعلم عن النقود؟ / Why Learn About Money?

Money is something you use every single day! Whether you buy bread from the bakery, pay for a bus ride, or save up for a toy, you need to understand coins and bills. A person who cannot count money can be cheated or make mistakes. Understanding money also teaches you about saving, spending wisely, and making change — skills every adult needs.

Module 8: Dollar Amounts

الموديول الثامن: مبالغ الدولار

One dollar ($1.00) equals 100 cents. You can make one dollar using different combinations: 100 pennies, 20 nickels, 10 dimes, 4 quarters, or any combination that adds to 100 cents. Dollar amounts are written with a dollar sign ($) and a decimal point. For example, $3.45 means 3 dollars and 45 cents. The decimal point separates the dollars from the cents. You solve money word problems the same way you solve other addition and subtraction problems, just with dollar signs and decimal points.

Dollar دولار — 100 cents

Dollar Sign ($) علامة الدولار — the symbol for dollars

Decimal Point نقطة عشرية — separates dollars from cents

مثال من الحياة / Everyday Example

إذا كان عندك 5.00$ وشريت كتاب بـ 2.30$، كم يبقى؟ 5.00$ - 2.30$ = 2.70$. هذا هو طرح المبالغ!

Module 9: Time

الموديول التاسع: الوقت

In Grade 1, you learned to tell time to the hour and half hour. Now in Grade 2, you learn to tell time to the nearest 5 minutes! The clock face has numbers 1-12. Each number represents 5 minutes when you look at the minute hand. So when the minute hand points to 1, it is 5 minutes past the hour. When it points to 3, it is 15 minutes past (also called 'quarter past'). When it points to 6, it is 30 minutes past (also called 'half past'). When it points to 9, it is 45 minutes past (also called 'quarter to' the next hour).

Hour ساعة — 60 minutes

Minute دقيقة — 60 seconds

A.M. صباحًا — from midnight to noon

P.M. مساءً — from noon to midnight

Quarter Past الربع بعد — 15 minutes after the hour

Half Past النصف بعد — 30 minutes after the hour

لماذا نتعلم قراءة الساعة؟ / Why Learn to Tell Time?

Time controls everything in our lives! School starts at a specific time, buses leave on a schedule, and TV shows air at set times. If you cannot tell time, you might miss your bus, be late for school, or burn your food in the oven. Doctors, pilots, chefs, and athletes all depend on precise timekeeping. Learning a.m. and p.m. helps you know whether it is morning or evening — 7:00 a.m. is breakfast time, but 7:00 p.m. is dinner time!

مثال من الحياة / Everyday Example

الدرس يبدأ الساعة 7:30 صباحًا
(a.m.)
وفترة الغداء 12:00 ظهرًا ،
(12:00 p.m.)،
والأذان 1:15 ظهرًا
(1:15 p.m. = quarter past 1).
!تعلم قراءة الساعة يساعدك في حياتك اليومية

Unit 4: Two-Digit Addition and Subtraction

الوحدة الرابعة: الجمع والطرح برقمين

Module 10: Addition and Subtraction Counting Strategies

الموديول العاشر: استراتيجيات العد للجمع والطرح

When adding or subtracting two-digit numbers, you can use counting strategies on a hundred chart or number line. To add 36 + 20, start at 36 on the hundred chart and move down 2 rows (each row is 10), landing on 56. To add 36 + 3, move right 3 spaces, landing on 39. To subtract 58 - 20, start at 58 and move up 2 rows to 38. These strategies use your understanding of place value to make adding and subtracting easier.

Module 11: Addition and Subtraction Grouping Strategies

الموديول الحادي عشر: استراتيجيات التجميع للجمع والطرح

Decomposing means breaking a number into parts. To add 27 + 8, decompose the 8 into 3 and 5: first add 3 to 27 to make 30 (27 + 3 = 30), then add the remaining 5 (30 + 5 = 35). To subtract 53 - 7, decompose the 7 into 3 and 4: first subtract 3 from 53 to make 50 (53 - 3 = 50), then subtract the remaining 4 (50 - 4 = 46). This strategy uses making a ten (or making a multiple of 10) to simplify the calculation.

لماذا نتعلم تفكيك الأعداد؟ / Why Decompose Numbers?

Decomposing numbers is a mental math superpower! Instead of needing paper and pencil, you can solve problems in your head. When a shopkeeper needs to give change for 50 pounds from a 73-pound purchase, they think: 73 to 80 is 7, 80 to 100 is 20, so 27 pounds change. This is decomposing! Engineers, builders, and anyone who works with numbers uses this skill daily.

Module 12: Represent and Record Addition and Subtraction

الموديول الثاني عشر: تمثيل وتسجيل الجمع والطرح

Regrouping for Addition

Regrouping (also called carrying) is what you do when the sum of the ones column is 10 or more. For example, 47 + 36: add the ones (7 + 6 = 13). The 13 ones is 1 ten and 3 ones, so you write 3 in the ones column and regroup (carry) the 1 ten to the tens column. Then add the tens: 4 + 3 + 1 (regrouped) = 8. So 47 + 36 = 83. Using base-ten blocks helps you see this: 7 ones + 6 ones = 13 ones = 1 ten rod + 3 ones blocks.

Regroup إعادة التجميع — exchanging 10 ones for 1 ten, or 10 tens for 1 hundred

Regrouping for Subtraction

Regrouping for subtraction (also called borrowing) is needed when the digit on top is smaller than the digit on the bottom. For example, 53 - 27: you cannot subtract 7 from 3, so you regroup. Take 1 ten from the 5 tens (making it 4 tens) and give it to the 3 ones (making it 13 ones). Now subtract: 13 - 7 = 6 ones, and 4 - 2 = 2 tens. The answer is 26. With base-ten blocks: trade 1 ten rod for 10 ones blocks, giving you 13 ones instead of 3.

نقطة مهمة / Key Point

Regrouping is NOT borrowing! When you borrow something, you give it back. When you regroup, you are reorganizing the same amount in a different way. 53 is the same as 4 tens + 13 ones. You did not borrow anything — you just grouped the blocks differently! Understanding this helps you truly understand the math, not just follow steps.

Module 13: Develop Addition and Subtraction Fluency

الموديول الثالث عشر: تطوير الإتقان في الجمع والطرح

Now you practice adding and subtracting fluently within 100. You also learn to add 3 or 4 two-digit numbers. For example, 23 + 45 + 31: add the tens (20 + 40 + 30 = 90), add the ones (3 + 5 + 1 = 9), then combine (90 + 9 = 99). You can also rewrite horizontal problems vertically to make them easier to solve. Writing numbers in columns keeps the ones lined up with ones, tens with tens, and so on.

Why Practice Fluency? / لماذا نتدرب على الجمع والطرح؟

Fluency is like being a fast reader. When you read fluently, you understand the story better because you are not stuck on every word. When you calculate fluently, you can solve real problems quickly. A cashier who must add up 5 items needs to be fast. A builder calculating total materials for a project needs accuracy. The more fluent you are, the more confident you become!

Module 14: Algebra

الموديول الرابع عشر: الجبر

Algebra in Grade 2 means using drawings and equations to represent word problems. A bar model is a drawing that shows the known and unknown quantities. For example, if a problem says 'Sara has 24 stickers. She gets some more. Now she has 37 stickers. How many did she get?', you draw a bar: the whole bar is 37, one part is 24, and the unknown part is the answer. The equation is 24 + ? = 37 or 37 - 24 = ?. The answer is 13.

Bar Model نموذج الشريط — a drawing that shows known and unknown quantities

Equation معادلة — a math sentence with an equal sign

Unknown مجهول — the number you need to find

Why Learn Algebra? / لماذا نتعلم الجبر؟

Algebra helps you solve real problems where some information is missing. When you wonder 'How many more days until my birthday?' you are solving for an unknown. When a shopkeeper asks 'How much did the customer spend if they gave me 50 and I gave 23 change?' they are using algebra. Engineers, doctors, and scientists all use algebra to find unknown quantities. It is one of the most powerful tools in all of mathematics!

Module 15: Addition and Subtraction Word Problems

الموديول الخامس عشر: مسائل الجمع والطرح الكلمية

Word problems tell a story and ask you to find something. The key is understanding what the problem is asking. Read the problem carefully, identify what you know and what you need to find, then decide whether to add or subtract. Some problems need more than one step (multistep). For example: 'Ali has 34 pounds. He earns 15 more. Then he spends 22. How much does he have left?' Step 1: 34 + 15 = 49. Step 2: 49 - 22 = 27. He has 27 pounds left.

مثال من الحياة / Everyday Example

كان عند أحمد 45 جنيهًا. أعطى أخاه 18 جنيهًا. كم بقي معه؟ 45 - 18 = 27 جنيهًا. هذه مسألة طرح كلمية!

Unit 5: Three-Digit Addition and Subtraction

الوحدة الخامسة: الجمع والطرح بثلاثة أرقام

Module 16: Three-Digit Addition

الموديول السادس عشر: الجمع بثلاثة أرقام

Three-digit addition follows the same rules as two-digit addition, just with an extra column for hundreds. Line up the numbers by place value (hundreds under hundreds, tens under tens, ones under ones). Start adding from the ones column, then tens, then hundreds. Regroup whenever a column adds to 10 or more. For example, 348 + 275: ones (8 + 5 = 13, write 3, carry 1), tens (4 + 7 + 1 = 12, write 2, carry 1), hundreds (3 + 2 + 1 = 6). Answer: 623.

Step 1: Line up numbers by place value: hundreds, tens, ones.

Step 2: Add the ones column first. If the sum is 10 or more, regroup (carry) the extra ten to the tens column.

Step 3: Add the tens column, including any regrouped ten. Regroup again if needed.

Step 4: Add the hundreds column, including any regrouped hundred. Write the final answer.

لماذا نتعلم الجمع بثلاثة أرقام؟ / Why Learn Three-Digit Addition?

Three-digit numbers appear everywhere in real life! Prices of electronics (499 + 275 for two items), populations of towns (348 people + 275 new residents), distances for travel (348 km + 275 km), and scores in games. Any time you add numbers larger than 100, you use three-digit addition. This is essential for budgeting, planning events, and managing money.

Module 17: Three-Digit Subtraction

الموديول السابع عشر: الطرح بثلاثة أرقام

Three-digit subtraction also follows the same rules as two-digit subtraction. Line up by place value, subtract starting from the ones column, and regroup when needed. The tricky part is when there are zeros. For example, 500 - 273: you cannot subtract 3 from 0, so you need to regroup. But there are 0 tens! You must regroup from the hundreds: 5 hundreds becomes 4 hundreds and 10 tens. Then regroup 1 ten to make 10 ones. Now you have 4 hundreds, 9 tens, and 10 ones. Subtract: 10 - 3 = 7, 9 - 7 = 2, 4 - 2 = 2. Answer: 227.

نقطة مهمة / Key Point

When subtracting with zeros, you may need to regroup across multiple columns. Take your time and check each column carefully. Remember: 500 = 4 hundreds + 9 tens + 10 ones. You borrowed from the hundreds to make tens, and from tens to make ones. The total value has not changed!

Unit 6: Measurement: Length

الوحدة السادسة: القياس: الطول

Module 18: Length in Inches, Feet, and Yards

الموديول الثامن عشر: الطول بالبوصة والقدم واليادرة

Length tells us how long something is from one end to the other. In the U.S. system, we measure length in inches, feet, and yards. An inch is about the length of your thumb from tip to first knuckle. A foot is 12 inches — about the length of a ruler. A yard is 3 feet or 36 inches — about the length of a guitar. When you measure, always start at the zero mark on the ruler, not at the edge, and make sure the ruler is straight along the object.

Inch بوصة — about the length of your thumb tip

Foot قدم — 12 inches

Yard ياردة — 3 feet or 36 inches

لماذا نتعلم قياس الطول؟ / Why Measure Length?

Measuring length is essential in construction, sewing, cooking, and sports. A tailor measures fabric in inches to make clothes that fit. A carpenter measures wood in feet to build furniture. An athlete measures the long jump in feet and inches. Even when you buy a new bed, you need to measure your room in feet to make sure it fits! Without measurement, nothing would fit together properly.

Module 19: Length in Centimeters and Meters

الموديول التاسع عشر: الطول بالسنتيمتر والمتر

The metric system is used by most countries around the world (including Egypt!). A centimeter is about the width of your little finger. A meter is 100 centimeters — about the width of a door or half the height of an adult. To estimate lengths: your little finger is about 1 cm wide, your hand is about 10 cm wide, and a meter stick is about the height of a 5-year-old. When you measure with a ruler, start at the zero mark and read the number where the object ends.

Centimeter سنتيمتر — about the width of your little finger

Meter متر — 100 centimeters, about half an adult's height

مثال من الحياة / Everyday Example

قم بقياس طاولة الطعام بالسنتيمتر! ستجد أنها حوالي 75 سنتيمتر. والباب المتر واحد عرضًا. وخاتم الإصبع حوالي 2 سنتيمتر.
القياس حولنا في كل مكان!

Module 20: Relate Addition and Subtraction to Length

الموديول العشرون: ربط الجمع والطرح بالطول

A number line can be used as a ruler to add and subtract lengths. For example, if a pencil is 5 inches long and a pen is 3 inches long, how long are they together? On a number line, start at 0, move 5 spaces for the pencil, then move 3 more spaces for the pen. You land on 8. So 5 + 3 = 8 inches. For subtraction: if a ribbon is 12 cm long and you cut off 4 cm, start at 12 on the number line and move back 4 spaces to 8. So 12 - 4 = 8 cm.

لماذا نربط الطول بالجمع والطرح؟ / Why Connect Length and Operations?

Combining lengths with addition and subtraction is something you do constantly! When you put two shelves side by side, you add their lengths to know the total width. When you cut a piece of wood, you subtract the cut length from the original. A seamstress adds fabric lengths for a dress. A builder adds room dimensions for a house plan. This connection between measurement and arithmetic is one of the most practical math skills!

Unit 7: Geometry and Fractions

الوحدة السابعة: الهندسة والكسور

Module 21: Two- and Three-Dimensional Shapes

الموديول الحادي والعشرون: الأشكال المسطحة والمجسمة

Two-Dimensional (2D) Shapes

2D shapes are flat. They have length and width but no thickness. In Grade 2, you identify and describe shapes by their attributes: the number of sides and vertices (corners). A triangle has 3 sides and 3 vertices. A quadrilateral (including rectangles, squares, parallelograms, and trapezoids) has 4 sides and 4 vertices. A pentagon has 5 sides, and a hexagon has 6 sides. A rectangle has 4 sides with opposite sides equal and 4 right angles. A square is a special rectangle where ALL sides are equal.

Side ضلع — a straight line that forms part of a shape

Vertex / Vertices رأس / أرؤس — a corner where two sides meet

Quadrilateral رباعي — any shape with 4 sides

Pentagon خماسي — a shape with 5 sides

Hexagon سداسي — a shape with 6 sides

Three-Dimensional (3D) Shapes

3D shapes take up space. They have length, width, and height. Key 3D shapes include: Cube (6 equal square faces, like a dice), Rectangular Prism (6 rectangular faces, like a box), Sphere (perfectly round, like a ball), Cone (1 circular base and 1 curved surface coming to a point, like an ice cream cone), and Cylinder (2 circular bases and 1 curved surface, like a can). You see these shapes everywhere in real life!

لماذا نتعلم الأشكال؟ / Why Learn Shapes?

Shapes are the building blocks of everything around you! Your phone is a rectangular prism. A football is a sphere. A tent is a triangular prism. Architects design buildings using shapes. Engineers design cars using shapes. Even artists use shapes to create paintings and designs. When you recognize shapes, you can describe the world more precisely and solve design problems. Every product you use was designed by someone who understood shapes!

مثال من الحياة / Everyday Example

انظر حولك! السقف هو مستطيل، الباب مستطيل، الكرة كرة، علبة الحليب أسطوانة، والمخدة منشور مستطيل! الأشكال في كل مكان!

Module 22: Understand Fractions

الموديول الثاني والعشرون: فهم الكسور

Fractions are about dividing a whole into equal parts. In Grade 2, you learn about halves (2 equal parts), thirds (3 equal parts), and fourths (4 equal parts). The most important word is EQUAL — if the parts are not the same size, they are not proper fractions. A half of a pizza means 2 slices of the same size. A fourth (quarter) of a cake means 4 pieces of the same size. A third of a chocolate bar means 3 equal pieces. We say 'one half of', 'one third of', or 'one fourth of' to describe one equal share.

Halves أنصاف — 2 equal parts

Thirds أثلاث — 3 equal parts

Fourths / Quarters أرباع — 4 equal parts

Equal Shares أجزاء متساوية — parts that are the same size

Partition تقسيم — to divide into equal parts

Partitioning Rectangles

You can partition (divide) a rectangle into rows and columns of same-sized squares. For example, a rectangle can be divided into 3 rows and 4 columns, making 12 equal squares (3 x 4 = 12). This connects what you learned about arrays in Module 2 to what you are learning about fractions now. Each small square is one equal share of the whole rectangle.

Different Shapes, Same Fraction

An important idea: equal shares of identical wholes do not need to have the same shape! For example, if you divide a rectangle into fourths, you can do it in different ways — 4 horizontal strips, 4 vertical strips, or 4 L-shaped pieces. As long as each piece has the same area, they are all valid fourths. This helps you understand that fractions are about equal size, not about shape.

لماذا نتعلم الكسور؟ / Why Learn Fractions?

Fractions are everywhere! When you share a pizza with friends, you use fractions. When a recipe says 'half a cup of sugar', that's a fraction. When a carpenter cuts a board into thirds, that's a fraction. When a doctor prescribes 'half a tablet', lives depend on understanding fractions! Musicians use fractions to read rhythm (half notes, quarter notes). Without fractions, we could not share fairly, cook properly, or measure precisely.

مثال من الحياة / Everyday Example

عندما تقسم رغيف العيش بالنصف بينك وبين أخيك، كل واحد يأخذ نصف (half).

إذا قسمته إلى 3 قطع متساوية، كل واحد يأخذ ثلث (third).

وإذا قسمته مع (4 أشخاص)، كل واحد يأخذ ربع (fourth)!

نقطة مهمة / Key Point

EQUAL is the most important word in fractions! If a pizza is cut into 2 pieces and one piece is bigger, those are NOT halves. Halves must be the same size. Always check: are the parts equal? If not, it is not a proper fraction!