Day 3

Day 3	AM1	Recap TWM and more questions Didactic Teaching – pros and cons Overview of Teaching Approaches using MCE Resources 1) Readiness- Engagement-Mastery (REM) 2) Concrete-Pictorial-Abstract (CPA)
	AM2	Problem Solving Strategy 1 – Guess and Check Problem Solving Strategy 2 – Draw a diagram Relate to questions in the textbooks
	PM	Lesson Planning Demonstration using G5 Chapter 2 (Number Sequences)

3-күн AM1 Recap TWM жана башка суроолор

Дидактикалык окутуу – жакшы жана жаман жактары

MCE ресурстарын колдонуу менен окутуу ыкмаларына сереп салуу

1) Даярдык - Кызыктуу болуу - Мастерлик (REM)

2) Конкреттүү-сүрөттүү-абстракттуу (CPA)

AM2 Көйгөйлөрдү чечүү стратегиясы 1 – Ойлон жана текшер

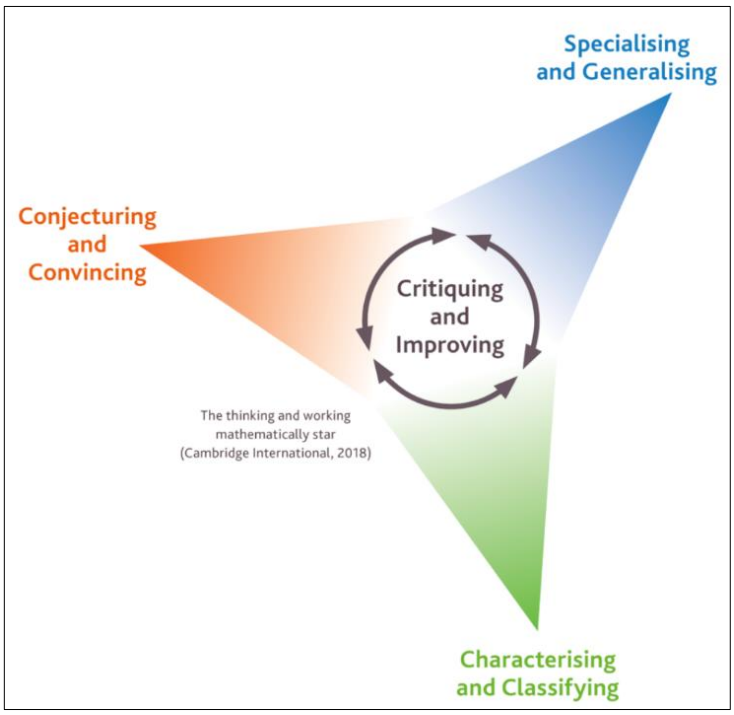
Маселени чечүү стратегиясы 2 – Диаграмманы тартыңыз

Окуу китептериндеги суроолор менен байланышыңыз

G5 2-бөлүмдү колдонуу менен PM Сабакты пландаштыруу демонстрациясы

(Сандардын тизмеги)

Revise TWM (30 – 40 mins) **(TWM ди кайра карап чыгуу (30 – 40 мүн.)**



TW.1 and TW.2 : Specialising and Generalising

(Жалпылоо жана адистештирүү)

TW3 and TW4 : Conjecturing and Convincing

(Болжолдоо жана ынандыруу)

TWM 5 and 6 : Characterising and Classifying

(Мүнөздөө жана классификациялоо)

TW7 and TW8 : Critiquing and Improving **(Сындоо жана жакшыртуу)**

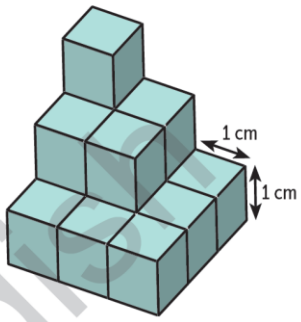
G7 Student Book Exercise 10F Q1, Q4 Page 354 – 355

G7 Студенттик китеби Exercise 10F Q1, Q4 Page 354 - 355

1 Look at the figure.

a Ruhie says, "Since the surface area of a small cube is 6 cm^2, the total surface area of the figure is 6 x 14 cm^2." Is Ruhie correct? Explain.

b Raj says, "Since the volume of a small cube is 1 cm^3, the total volume of the figure is 14 × 1 cm^3." Is Raj correct? Explain.



Refer to TG
(a) TWM : critiquing
(b)TWM : improving
Raj's reasoning is correct. The total volume of the solid is made up of 14 unit cubes so the volume is indeed 14

TG карагыла
(а) TWM: сындоо
(б) TWM: жакшыртуу

Радждын ою туура. Катуу заттын жалпы көлөмү 14 бирдик кубдан турат, ошондуктан көлөмү чындыгында 14 $см^3$

4 A 4 cm by 4 cm by 4 cm cube is as shown. All the sides of the cube are painted as shown.



a What is the total surface area painted?

b When the cube is dismantled, how many 1-cm cubes are not painted on any sides?

Workbook Exercise 10.6

Personalised AI-DRIVEN Assessment

(b)The interior 2 cm by 2 cm by 2 cm cube is not painted.
There are 2^3 = 8 1-cm cubes not painted on any sides
Use manipulatives to make conjecture
TWM : **conjecturing** and then **convincing (explaining the answer)**

(б) Ички 2 см 2 см 2 см куб боёлгон эмес.

Эч бир тарабы боелбогон 23 = 8 1 см куб бар

Божомолдоо үчүн манипуляцияларды колдонуңуз

TWM: божомолдоо жана андан кийин ынандыруу (жоопту түшүндүрүү)

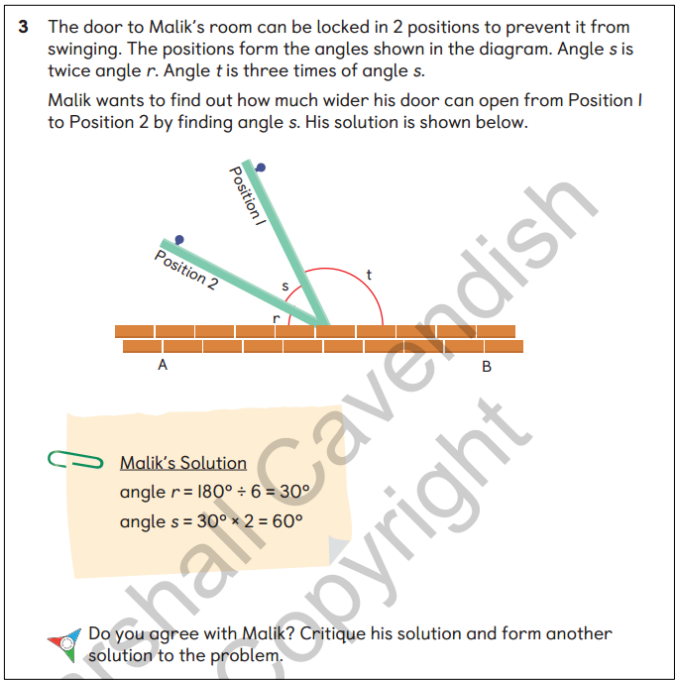
You may want to show the relevant part of the TG to your participants
(Сиз катышуучуларга TGнин тиешелүү бөлүгүн көрсөтсөңүз болот)

Estimated Time	Resources Required	Instructional Strategies
	• Student's Book, Practice 10F, pp. 354-355 • Workbook Exercise 10.6 • Personalised Digital Assessment* 10.6	***Additional Practice*** • If time allows, have students work on the questions in Practice 10F. If not, these questions can be assigned as homework together with the exercise in the Workbook. • In Question 1, students practise **critiquing (TWM.07)** when they can explain if the statements made by Ruhie in (a) and Raj in (b) is correct. • In Question 4(b), students practise **conjecturing (TWM.03)** and **improving (TWM.08)** when they find the number of 1-cm cubes that are not painted on any sides. • For students who require more practice to master the concept(s) or more challenge, assign them the personalised digital assessment*.
40 min	• Student's Book, Key Ideas, p. 356	• Go through Key Ideas with the class to consolidate students' learning for the chapter. • Depending on the time available, assign Chapter 10 Revision as classwork or homework.
40 min	• Student's Book, Chapter 10 Revision, pp. 357-360	• Go through Chapter 10 Revision with the class. • In Question 11, students practise **classifying (TWM.06)** when they can classify the solids according to the number of faces, edges and vertices they have. • Have students assess themselves using the self-assessment checklist in the Student's Book. • Have students identify their areas of weaknesses and use the personalised digital assessment* in the sections to help them master these areas.

G5 SB Chapter 5 Page 63 (G5 Студенттик китеби (SB) 5-бөлүм 63-бет)

Get participants to discuss this and ask which TWM students will experience

Катышуучуларды муну талкуулоого чакырыңыз жана TWM студенттеринин кайсынысы баштан өткөрөрүн сураңыз



TWM: Critiquing
followed by improving if another student give and explain the correct answer

Lesson plan idea: Modify or set a similar question to suit the profile of your students

TWM: Сындоо

андан кийин башка окуучу туура жооп берип, түшүндүрүп берсе, жакшыртат

Сабактын планынын идеясы: Окуучуларыңыздын профилине ылайыкташтырылган суроону өзгөртүңүз же коюңуз

There are many problem-solving strategies – check and drawing a diagram

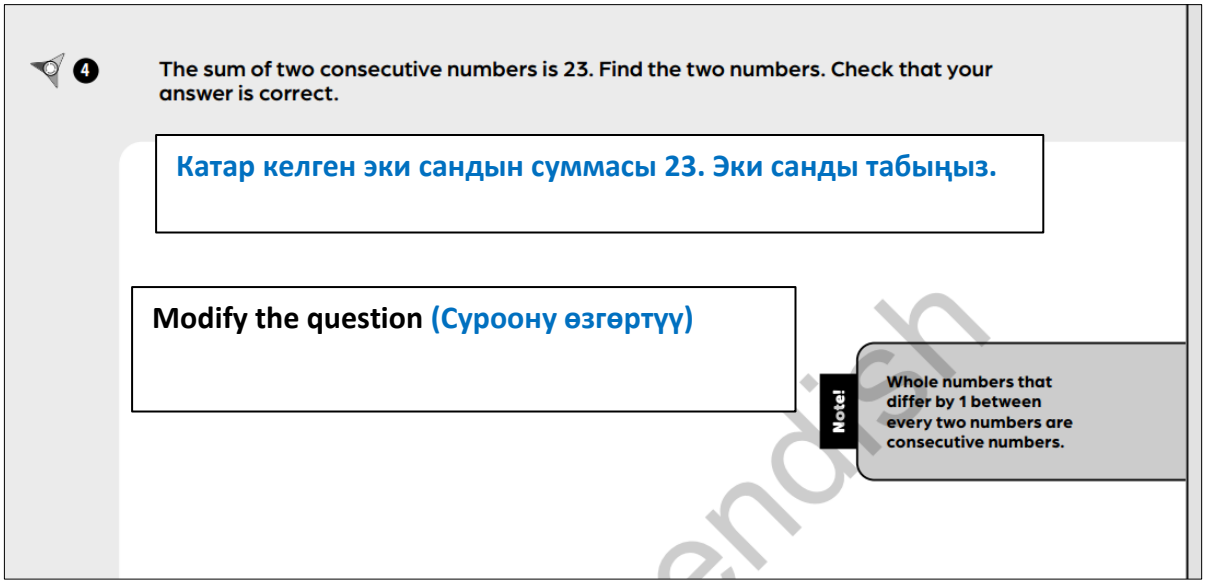
Marshall Cavendish Copyright

Көйгөйлөрдү чечүүнүн көптөгөн стратегиялары бар – экөөнү гана талкуулагыла: Болжол менен текшерип, диаграмма тарткыла.

Problem-solving Strategy 1 – Guess and Check
G7 WB Chapter 4 Page 87

Көйгөйлөрдү чечүү стратегиясы 1 – Ойло жана текшер

G7 WB 4-бөлүм 87-бет



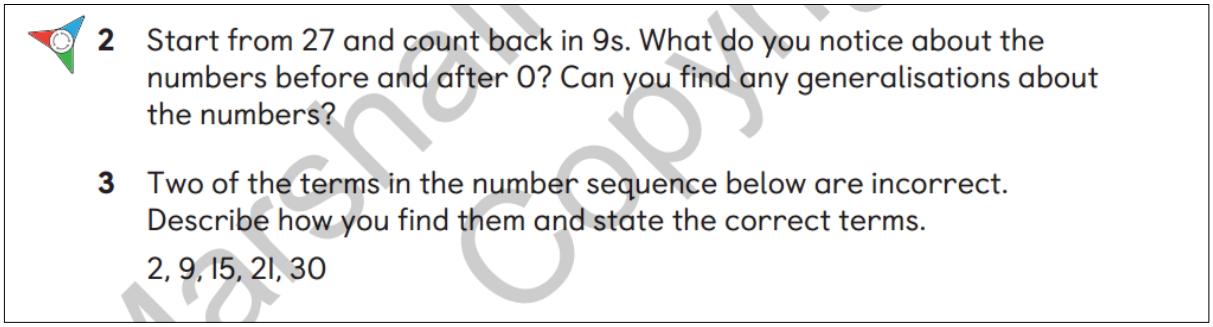
4 The sum of two consecutive numbers is 23. Find the two numbers. Check that your answer is correct.

Катар келген эки сандын суммасы 23. Эки санды табыңыз.

Modify the question (Суроону өзгөртүү)

Note! Whole numbers that differ by 1 between every two numbers are consecutive numbers.

G5 SB Chapter 2 Page 14 (G5 SB 2-бөлүм 14-бет)



2 Start from 27 and count back in 9s. What do you notice about the numbers before and after 0? Can you find any generalisations about the numbers?

3 Two of the terms in the number sequence below are incorrect. Describe how you find them and state the correct terms.

2, 9, 15, 21, 30

2. -9 0 9 18 27

3. Try-and-guess

2, 9, 16, 23, 30

2, 10, 18, 26, 34

3, 9, 15, 21, 27

TWM : Generalising

The numbers before and after 0 are negative of each other

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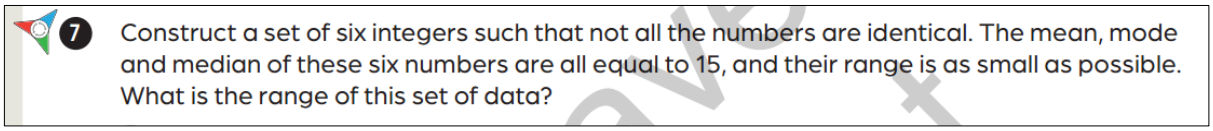
Note : the general term = 9n.
Suggestion: Amend the question say start from 24 and count back in 6 steps.

TWM: Жалпылоо

0гө чейинки жана кийинки сандар бири-бирине терс
Эскертүү: жалпы термин = 9n.

Сунуш: Суроону оңдоп, 24төн баштаңыз жана 6 кадам менен кайра санаңыз.

G7 SB Chapter 6 Page 215 (G7 SB 6-глава 215-бет)



TWM : specialising (we constructing an example to fulfil certain conditions)

TWM: адистештирилген (белгилүү шарттарды аткаруу үчүн биз үлгү түзөбүз)

Thinking and teaching point: The range is as small as possible so can it be 1 ?
Use Guess-and-check to see that the range cannot be 1 so now try 2
Answers : 14, 15, 15, 15, 15, 16
Teaching point : the average of the smallest and the largest must be equal to 15

Ой жүгүртүү жана окутуу пункту: диапазон мүмкүн болушунча аз, ошондуктан ал 1 болушу мүмкүнбү?

Диапазон 1 болушу мүмкүн эмес экенин көрүү үчүн "Угадай жана текшер" функциясын колдонуңуз, андыктан азыр 2ге аракет кылып көрүңүз

Жооптор: 14, 15, 15, 15, 15, 16

Окутуу пункту: эң кичинеси менен эң чоңунун орточосу 15ке барабар болушу керек

Problem solving strategy 2 : Draw a diagram

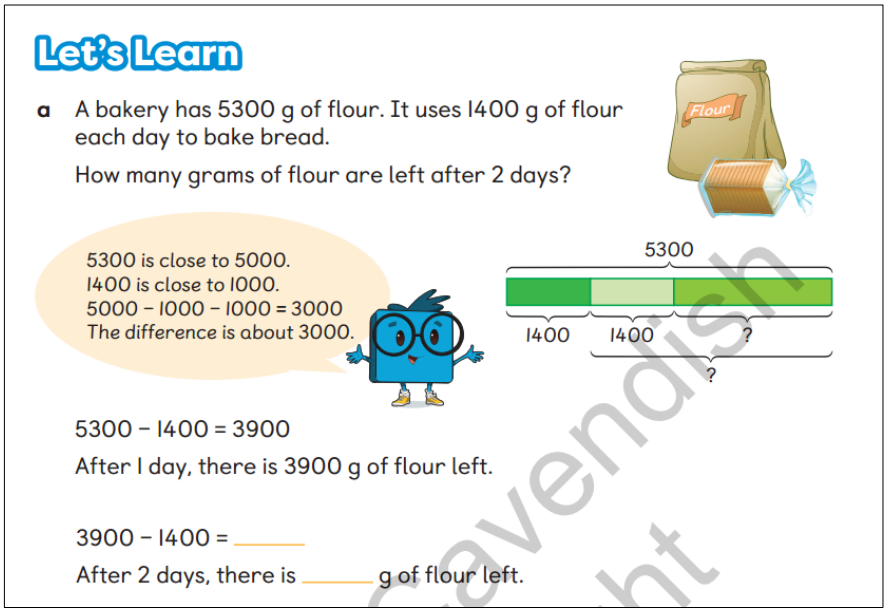
Маселени чечүү стратегиясы 2 : Диаграмманы тартыңыз

Mentioned that drawing the bar-diagram is a useful method for problem solving when students have not learnt algebra (common feature in lower grade MCE textbooks)

Студенттик алгебраны үйрөнө элек кезде штрих-диаграмманы чийүү маселени чечүүнүн пайдалуу ыкмасы болуп саналат (төмөнкү класстын MCE окуу китептериндеги жалпы өзгөчөлүк)

G5 Student Book Chapter 9 Page 118

G5 Студенттик китеби 9-бөлүм 118-бет



Let's Learn

a A bakery has 5300 g of flour. It uses 1400 g of flour each day to bake bread.

How many grams of flour are left after 2 days?

5300 is close to 5000.
1400 is close to 1000.
5000 − 1000 − 1000 = 3000
The difference is about 3000.

5300
1400 1400 ?
?

5300 − 1400 = 3900

After 1 day, there is 3900 g of flour left.

3900 − 1400 = _____

After 2 days, there is _____ g of flour left.

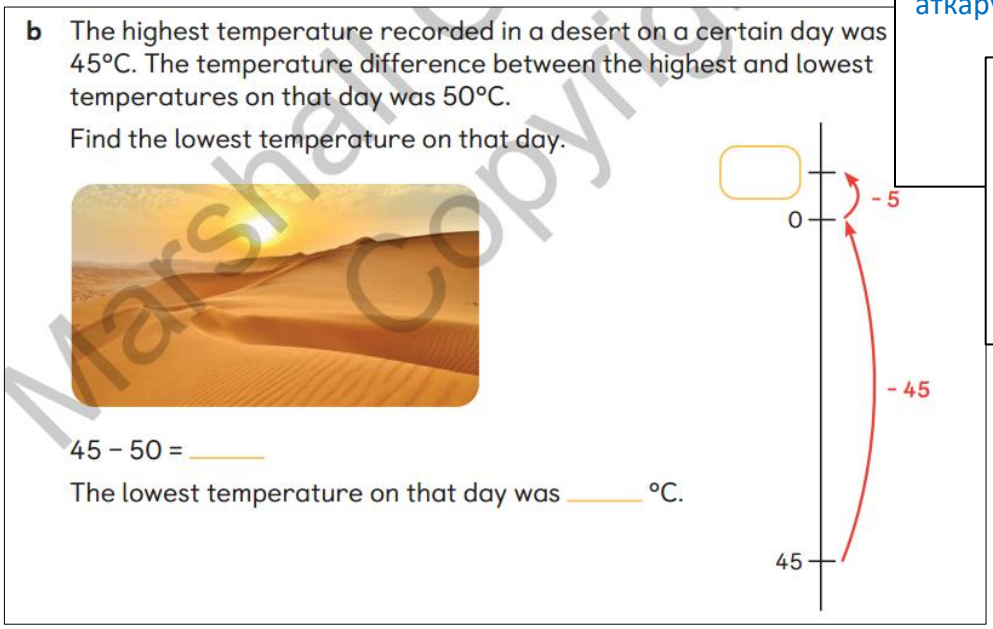
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Drawing a bar diagram helps students to visualise

Штанга диаграммасын тартуу окуучуларга визуалдаштырууга жардам берет

Ask participants if no diagram is drawn, will it be easier for students to do the question ?

Катышуучулардан диаграмма тартылбаганын сураңыз, окуучуларга суроону аткаруу оңой болобу?



b The highest temperature recorded in a desert on a certain day was 45°C. The temperature difference between the highest and lowest temperatures on that day was 50°C.

Find the lowest temperature on that day.

45 − 50 = _____

The lowest temperature on that day was _____ °C.

0
- 5
- 45
45

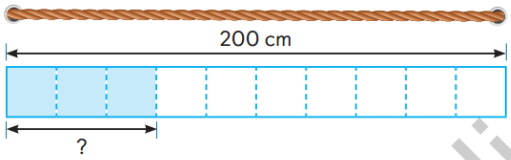
What do you think of this diagram ?

Бул диаграмма жөнүндө эмне деп ойлойсуз?

G5 SB Chapter 12 Page 152 (G5 SB 12-бөлүм 152-бет)

Let's Learn

a A rope was 200 cm long. James cut $\frac{3}{10}$ of the rope. What length of rope did James cut?

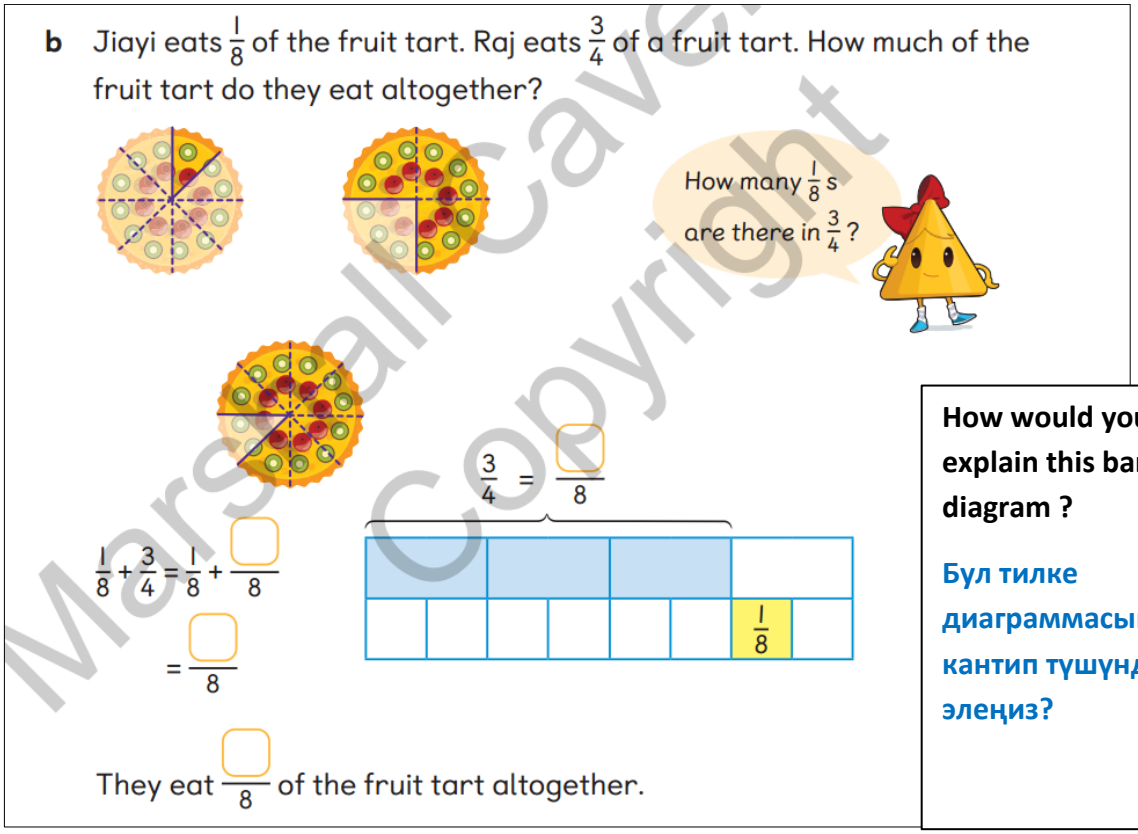


Bar diagram provides clear visualisations of the problem that will help especially the weaker students.

Штанга диаграммасы көйгөйдүн так визуализациясын камсыз кылат, бул өзгөчө начар студенттерге жардам берет.

G5 SB Chapter 13 Page 171 (G5 SB 13-глава 171-бет)

1 2 3 4 5 6



How would you explain this bar diagram ?

Бул тилке диаграммасын кантип түшүндүрөт элеңиз?

Group work : Craft a new question that uses the bar diagram method

Idea for improving the existing Lesson Plan you have in TG

Топтук иш: Тилке диаграмма ыкмасын колдонгон жаңы суроо түзүңүз
Сиз TG бар Сабак планын жакшыртуу үчүн идея

Eg

Sam has 5 times as many marbles as Tom. If Sam gives 26 marbles to Tom, the two friends will have exactly the same amount.
How many marbles do they have altogether?

Сэмде Томдон 5 эсе көп мрамор бар. Эгерде Сэм Томго 26 мрамор берсе, эки достун колунда дал ошондой сумма болот.

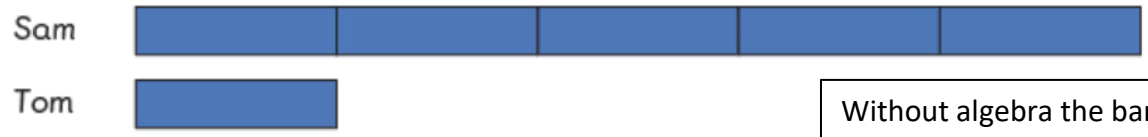
Алардын бардыгы болуп канча мрамор бар?

If a student has not learnt Algebra, drawing bar diagrams can solve the following question (illustration of the drawing-a-diagram strategy)

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Эгерде студент алгебраны үйрөнбөсө, штрих диаграммаларды тартуу төмөнкү суроону чече алат (диаграмманы тартуу стратегиясынын иллюстрациясы)

Before (Мурда)



After



Without algebra the bar-diagram can be used to solve the question rather easily

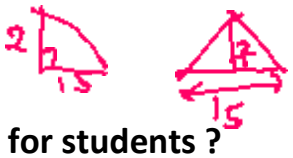
Алгебрасыз бар-диаграмма суроону оңой эле чечүүгө болот

G7 SB Chapter 10 Page 335 (bottom)

(G7 SB 10-бөлүм 335-бет (төмөндө)

5 A triangle has an area of 15 cm². Draw two possible triangles that have the same area.

What TWM is this ? Бул кандай TWM?



The wo specific examples demonstrates specialising

Many possible answers so what can be the thinking process for students ?

Өзгөчө мисалдар адистештирилгендигин көрсөтүп турат



Көптөгөн мүмкүн болгон жооптор, андыктан студенттердин ой жүгүртүү процесси кандай болушу мүмкүн?

==========

What is didactic teaching (frontal teaching)?

Дидактикалык окутуу (фронталдык окутуу) деген эмне?

[Note: go through this briefly and let teachers realise the shortcomings of a didactic teaching – getting teachers to buy-in using new approaches to teaching is essential]

[Эскертүү: муну кыскача карап чыгып, мугалимдерге дидактикалык окутуунун кемчиликтерин түшүнүүгө мүмкүнчүлүк бериңиз – мугалимдерди окутуунун жаңы ыкмаларын колдонууга тартуу абдан маанилүү]

Key characteristics of didactic teaching:
(Дидактикалык окутуунун негизги мүнөздөмөлөрү:

Teacher-centered: (• Мугалимге багытталган:

The teacher is the main source of information and directs the learning process.

Мугалим маалыматтын негизги булагы болуп саналат жана окуу процессине жетекчилик кылат.

- **Direct instruction:**

Information is presented directly to students, often through lectures, presentations, or demonstrations.

• Түз нускама:

Маалымат студенттерге түздөн-түз берилет, көбүнчө лекциялар, презентациялар же демонстрациялар аркылуу.

- **Well-suited for large classes:**

This approach can be efficient for teaching large groups, particularly when the subject matter is fact-based and objective.

• Чоң класстар үчүн ылайыктуу:

Бул ыкма чоң топторду окутуу үчүн эффективдүү болушу мүмкүн, айрыкча предмет фактыларга негизделген жана объективдүү болгондо.

- **Contrast with Pedagogy:**

Didactic teaching is often contrasted with pedagogy, which emphasizes a more student-centered approach, focusing on individual student needs and fostering active learning through various methods beyond direct instruction.

• Педагогика менен карама-каршы:

Дидактикалык окутуу көбүнчө студентке багытталган мамилени баса белгилеген педагогикадан карама-каршы келет, студенттин жеке муктаждыктарына көңүл бурат жана тикелей окутуудан тышкары ар кандай ыкмалар аркылуу активдүү окууга көмөктөшөт.

Get the participants to discuss :
(i) Pros and cons
(ii) Can we ignore it completely ? If No, how can we improve this mode of instruction?

Катышуучуларды талкуулоого чакырыңыз:

(i) Жакшы жана жаман жактары

(ii) Биз ага толугу менен көңүл бурбай коё алабызбы? Жок болсо, кантип жакшырта алабыз

бул окутуу режими?

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(b) Overview of Teaching Approaches Using the MCE resources
(i) Readiness-Engagement-Mastery (REM)
(ii) Concrete-Pictorial-Abstract (CPA approach)

(б) MCE ресурстарын колдонуу менен окутуу ыкмаларына сереп салуу

(i) Даярдык-Калыштыруу-Өздөштүрүү (REM)

(ii) Конкреттүү-сүрөттүү-абстракттуу (CPA ыкмасы)

(i) MC textbooks design framework is based on the Readiness-Engagement-Mastery (REM) instructional model – which comprises of 3 phases of learning: Readiness, Engagement, and Mastery .

(i) MC окуу китептеринин дизайн негизи Даярдык-Engagement-Mastery (REM) окутуу модели – 3төн турат үйрөнүү этаптары: Даярдык, тартуу жана өздөштүрүү.

Readiness : Recall and Look back
Engagement : Chapter opener, comics, side notes etc
Mastery : Practice questions , Work Book

Даярдык: Эстөө жана артка кара

Тартуу: Бөлүмдү ачуу, комикс, каптал жазуу ж.б

Өздөштүрүү: Көнүгүү суроолору, Жумуш китеби

(ii) The **Concrete-Pictorial-Abstract (CPA) approach** is a teaching method that guides students through learning by using concrete objects, visual representations, and then abstract symbols. This method is particularly helpful for understanding mathematical concepts, but can also be applied to other subjects.

(ii) Конкреттүү-сүрөттүү-абстракттуу (CPA) ыкмасы - бул окуучуларды конкреттүү объектилерди, визуалдык репрезентацияларды, андан соң абстракттуу символдорду колдонуу аркылуу окутууга багыттоочу окутуу ыкмасы. Бул ыкма математикалык түшүнүктөрдү түшүнүү үчүн өзгөчө пайдалуу, бирок башка сабактарга да колдонсо болот.

Here's a breakdown of each stage:

- **Concrete:**

Students interact with physical, tangible objects to understand a concept. For example, using blocks to represent numbers or manipulatives to understand fractions.

- **Pictorial:**

Students transition to visual representations like drawings or diagrams to model the concept. This stage helps them connect the concrete experience to a visual image.

- **Abstract:**

Students use abstract symbols like numbers and mathematical notation to represent the concept. This stage allows them to apply their understanding independently.

Бул жерде ар бир этаптын бөлүштүрүлүшү:

• Бетон:

Студенттер бир түшүнүктү түшүнүү үчүн физикалык, материалдык нерселер менен өз ара аракеттенишет. Мисалы, сандарды көрсөтүү үчүн блокторду же бөлчөктөрдү түшүнүү үчүн манипуляцияларды колдонуу.

• Сүрөттүү:

Студенттер концепцияны моделдөө үчүн чиймелер же диаграммалар сыяктуу визуалдык өкүлчүлүккө өтүшөт. Бул этап аларга конкреттүү тажрыйбаны визуалдык сүрөт менен байланыштырууга жардам берет.

• Аннотация:

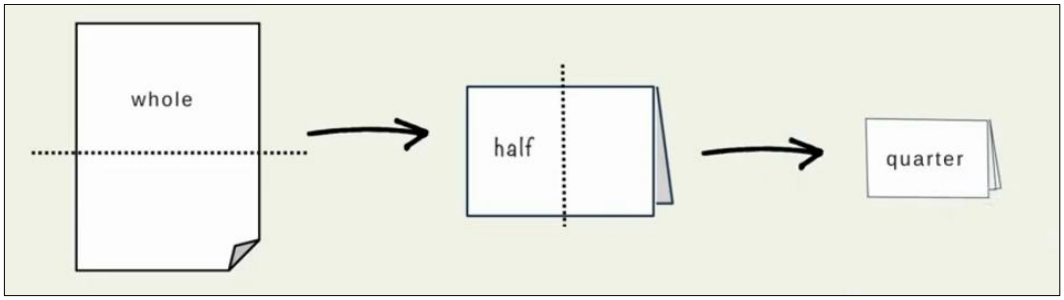
Студенттер түшүнүктү көрсөтүү үчүн сандар жана математикалык белгилер сыяктуу абстракттуу символдорду колдонушат. Бул этап аларга өз түшүнүгүн өз алдынча колдонууга мүмкүндүк берет.

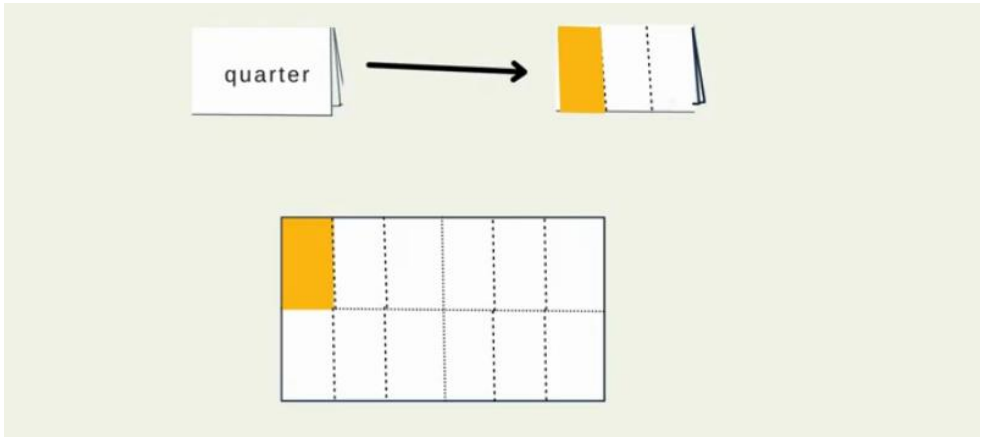
CPA in Action

Group Work : How would you demonstrate $\frac{1}{4} \div 3$?

CPA аракетте

Топтук иш: Кантип демонстрациялайт элеңиз?





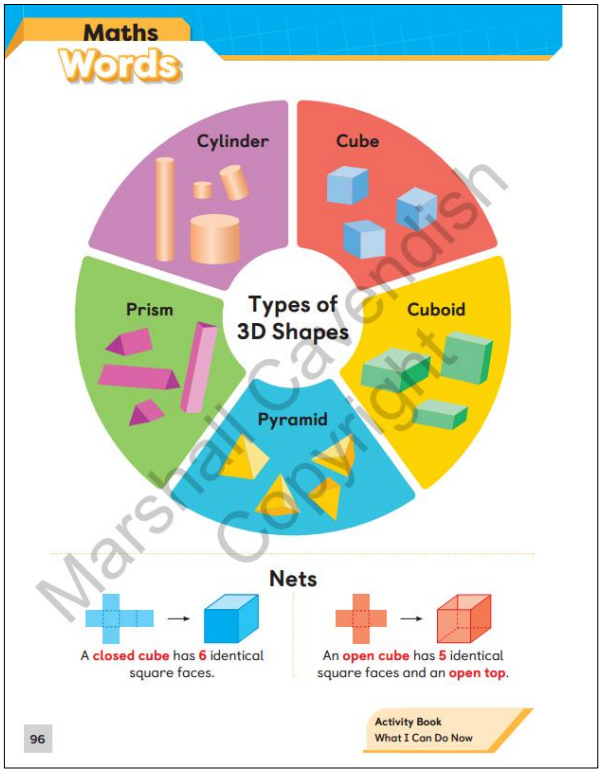
After going through the “concrete” step – to make sense of the division , students must be familiar with the procedure

"Конкреттүү" кадамдан өткөндөн кийин - бөлүүнү түшүнүү үчүн студенттер процедура менен тааныш болушу керек.

$$\frac{1}{4} \div 3 = \frac{1}{4} \times \frac{1}{3}$$
$$= \frac{1}{12}$$

G7 Student Book Chapter 10 Solids

(G7 Студенттик китеби 10-бөлүм Катуу заттар)



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Copyright

Use concrete 3D solids to help students visualise surface area and volume of solids

so that they can transit from using concrete images to pictorial illustrations of some common 3-D objects.

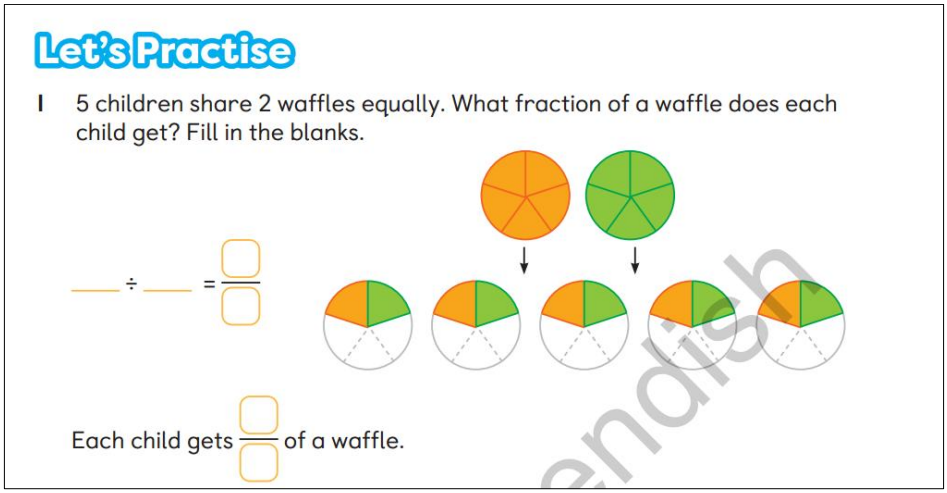
Студенттерге катуу нерселердин бетинин аянтын жана көлөмүн көрүүгө жардам берүү үчүн бетон 3D катуу заттарды колдонуңуз

алар конкреттүү сүрөттөрдү колдонуудан кээ бир жалпы 3-өлчөмдүү объектилердин сүрөттүү иллюстрацияларына өтүшү үчүн.

G5 SB Chapter 12 Page 150 (G5 SB 12-бөлүм 150-бет)

Pictorial representations of the question help students to visualise the meaning of two fifth in this context

Суроонун сүрөттөлүшү



PM Session (Премьер-министрдин сессиясы)

Role Play Lesson Plan

- **The Teacher Guide contains the Schedule of Work and a generic Lesson Plans**
- **Teachers just have to edit it to suit the pace and profile of the students**

Ролдук оюндун планы

- Мугалим үчүн колдонмо иш тартибин жана жалпы сабак пландарын камтыйт

- Мугалимдер аны окуучулардын темпине жана профилине ылайыкташтырып оңдоп коюшу керек

In this session, we will select one lesson plan to demonstrate how we can improve or add in new elements to an existing lesson plan. Your considerations can be

1. **Any possible new or edited questions for TWM**
2. **Modify an existing example to cater to different groups of students (differentiated instructions)**
3. **New approaches**

Do take note that improving an existing lesson plan needs experience, effort and discussions among teachers

Бул сессияда биз учурдагы сабак планын кантип жакшыртуу же жаңы элементтерди кошууга болорун көрсөтүү үчүн бир сабак планын тандайбыз. Сиздин ойлор болушу мүмкүн

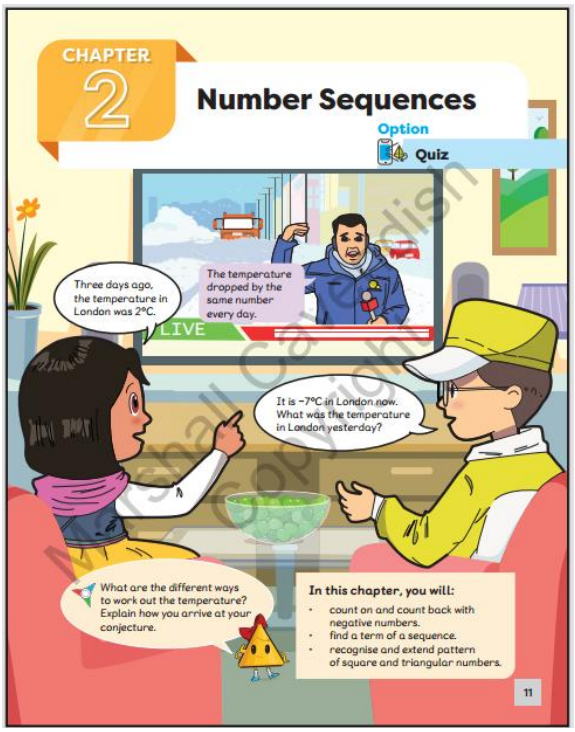
1. TWM үчүн бардык мүмкүн болгон жаңы же түзөтүлгөн суроолор

2. Студенттердин ар кандай топторун канааттандыруу үчүн учурдагы мисалды өзгөртүңүз (дифференцияланган нускамалар)

3. Жаңы ыкмалар

Учурдагы сабак планын өркүндөтүү үчүн мугалимдердин тажрыйба, күч-аракет жана талкуулар керек экендигин эске алыңыз

SB Grade 5 Chapter 2 Page 11 – 12 (SB 5-класс 2-бөлүм 11-12-бет)





First go through the Schedule of Work with teachers first

The Schedule of Work gives an overview of the number of lessons required for the whole chapter

Алгач мугалимдер менен иштөө графигин карап көрүңүз

Иш графиги бүткүл бөлүмгө керектүү сабактардын санын көрсөтөт

Section A Count On and Back for Sequences

Number of Periods: 3

Learning Objective

- **5Nc.01** Count on and count back in steps of constant size, and extend beyond zero to include negative numbers.

Expected Prior Knowledge

- Count on and back in steps for numbers smaller than 10.
- Count on and back in steps for tens, hundreds and thousands, and extending beyond zero.

Note

In this section, the emphasis is on building on the concept of more than or less than in steps. Number lines and number chips can be used to guide students to recognise negative numbers, to count in steps across zero, and to differentiate the positive and negative numbers. Use these to reinforce patterns and strengthen counting on and back. Focusing on 7, 8 and 9, start with pictorial aids, such as number lines and hundreds charts to model and count the jumps. Students also use concrete aids such number strips, metre rules and dice to act out counting on and counting back in a number sequence.

In the abstract stage, students are expected to work mentally (with symbols, for example), but provision has been made for those who still need pictorial aids.

Number lines and number chips can be used to guide students to recognise negative numbers, to count in steps across zero and to differentiate the positive and negative numbers. Use these to reinforce patterns and strengthen counting on and back.

Language Support

Vocabulary: sequences, term-to-term rule, constant

Build a word wall in the class before the start of the lesson. Explain the meanings of the words to the students before the lesson. As the lesson proceeds, focus the students' attention on the specific words as they appear in the text and during the lesson.

Common Misconceptions

Misconception:
Students may incorrectly consider negative integers with a larger digit as greater than a positive integer with a smaller digit for example $-2 > 1$.

How to address the misconception:
Use a number line to show students how numbers extend beyond zero to negative numbers. Use different colours to represent positive and negative numbers. Using 0 as a reference, show students that –2 means to count back in twos from 0, while 1 means to count on in ones from 0. Draw their attention to the pattern of digits when counting on and back with negative numbers.

Show students a few more examples, such as –3 and 2 or –3 and 1, to ensure that students understand that negative integers are smaller than positive integers, regardless of the digits of the negative numbers.

At the end of the lesson, give examples of positive and negative integers to students. Have students tell which integer is greater to check if they have cleared up the misconception.

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You may consider changing the wordings for example “Language Support:” or simplify or condense the write-up

Сиз, мисалы, "Тилди колдоо:" деген сөздөрдү өзгөртүүнү же жазууну жөнөкөйлөтүүнү же кыскартууну ойлонушуңуз мүмкүн.

Lesson Plan

This lesson plan will be available online for you to edit and customise according to your requirements.

Lesson 1 (40 min)

Warm up (15 min)	**Chapter Opener**
	rule of –3.)
	• Use the MCE Cambridge app to launch the quiz* on page 11 of the Student's Book and elicit student's responses. Help them to recall how to count on and count back.
	• Then go through the objectives of the chapter.
	This material has not been through the Cambridge International endorsement process.
Lesson Introduction (5 min)	• Go through the learning objective that students will learn in this section. **Look Back** • Get students to recall prior knowledge on counting on and back in steps by discussing as a class. • Have students practise **generalising (TWM.02)** as they study the sequence. Ask students what the sequence is that Caz has seen. *(Expected answers: She is counting back in 5s. The heights from the high platform to the low platform, from the low platform to the ground level, and from ground level and bottom of the pool form a pattern. The numbers are getting smaller. The numbers are 5 less each time. Counting back in 5s, 5 comes next after 10 in the pattern because counting back in 5s from 10 or finding 5 less than 10 gives 5. The term-to-term rule is –5.)*
Lesson development: Anchor Task	**Thinking Cap** • The objective is to have students use their prior knowledge to explore new ideas and possible solutions through critical and creative thinking.

Chapter Opener

Explain and interpret 3 days ago and today using a number line

2.More scaffolding steps

Do you think students notice the decrease of the temperature is 3°C? Need to insert scaffolding steps for students to understand this

Use Try-and-Check

Count-back : -2, -3 , -5 , -7

Бөлүм ачкычы

1. Сан сызыгынын жардамы менен 3 күн мурун жана бүгүн түшүндүрүп, чечмелеңиз

2. More scaffolding кадамдар

Insert : Learning objectives for this Section A

1. Students are able to count on and count back in various steps in sequences with negative numbers

Киргизүү : Бул бөлүмдүн окуу максаттары А

1. Окуучулар терс сандар менен катар ар кандай кадамдарды санап, кайра санай алышат

Suggestions:

Create a new column for (learning plan for

Сунуштар:

Мындай сабак планы үчүн жаңы тилке түзүңүз (окуу материалдары талап кылынат).

"Ойлон, жупта, бөлүш" стратегиясы бул иш үчүн ылайыктуубу?

Артка кара

Керек болсо жаңы суроолорду киргизиңиз

Терминден-терминге эреженин маани эмне жана

Additional question:

For example: from 10 to -11 can we count back (decrease) by 3 steps each time ? How about 4 steps?

Сунуштар:

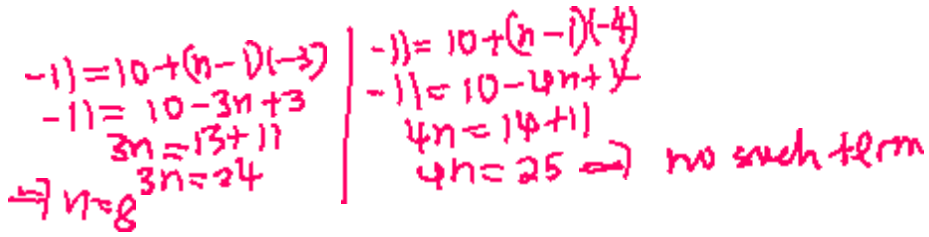
Мындай сабак планы үчүн жаңы тилке түзүңүз (окуу материалдары талап кылынат).

"Ойлон, жупта, бөлүш" стратегиясы бул иш үчүн ылайыктуубу?

Артка кара

Керек болсо жаңы суроолорду киргизиңиз

Терминден-терминге эреженин маанiси эмне жана -5 кандайча алынганын түшүндүргүлө



Lesson development: Learn (a) **C-P**-A **(10 min)**	**Let's Learn (a)** • Display and read the problem. • Prepare concrete manipulatives in the form of number lines for • Have students discuss in pairs how they can count back in step submarine moves down the water over a period of time. • Have them draw on an empty number line to show the term-to-t • Facilitate a class discussion by asking students: - How many jumps are there between 3 and –24? *(Expe* - How do the digits change when you count back? *(Exp decrease or drop by 9 each time.)* - What happens if we count on in 9? *(Expected answer: each time.)* - How can you count back to find the depth of the subm another 9 m after –24 m? - What do you think will be 9 less than –24? Convince y number line. (*Expected answer: Every 15 seconds, th We count back in 9s. The depth after –24 m is –33 m from –24.*)

Explain the meaning of “how many jumps”

1.Ask a student to describe the situation of the question

2.If the submarine goes down 9 m every 10 seconds, what is the depth after 40 seconds ?

"Канча секирүү" маанисин түшүндүрүңүз

1.Студенттен суроонун абалын сүрөттөп берүүсүн сураныңыз

2.Эгер суу астындагы кайык 10 секунд сайын 9 м ылдый түшсө, 40 секунддан кийин тереңдик канча болот?

Prepare another similar question (the Try feature in G7 book)

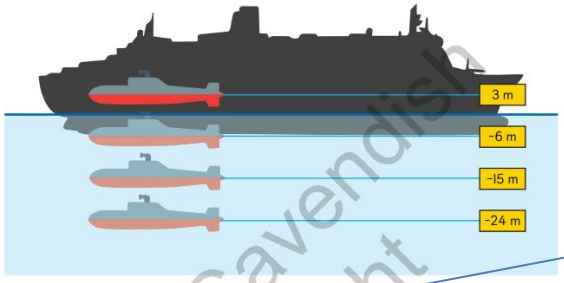
Differentiated Instruction

Modify it to a less complicated question – For example, every 1 minute, it goes down 4 m

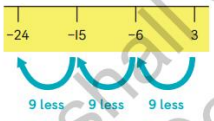
Окшош дагы бир суроону даярдаңыз (G7 китебинде аракет кылуу функциясы)

Let's Learn

a The diagram shows how a submarine moves down the water over a period of time. The submarine is 3 m above the sea level before it is released into the water.



The submarine goes down 9 m every 15 seconds.



The sequence shows counting back from 3 in 9s.

Every "1 second" be less confusing for student – can highlight this in the lesson plan

Ар бир "1 секунд" студент үчүн азыраак түшүнүксүз болушу мүмкүн - муну сабактын планында баса белгилей аласыз

Highlight in the lesson plan that we can draw vertical number line.

Сабактын планында вертикалдуу сан сызыгын тарта алырыбызды баса белгилеңиз

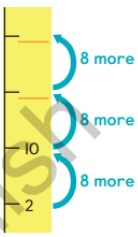
If you have time go through Section A Lesson 2 Lesson Plan and modify the lesson plan

Эгер убактыңыз болсо, А 2-сабактын планын окуп чыгыңыз жана сабактын планын өзгөртүңүз

b The height of the hot air balloon is at 2 m.
It rises 8 m every 1 second.



The sequence shows counting on from 2 in 8s.
The height of the hot air balloon rises to a height of _____ m after 3 s.



If the hot air balloon continues to rise for another 1 second, how can you count on to find its height?



Let's Practise

1 a Count on in 7s.

−11, −4, _____, _____, _____

b Count back in 8s.

25, _____, 9, _____, −7, _____

c Count back in 9s.

23, 14, _____, _____, _____, _____

2 Start from 27 and count back in 9s. What do you notice about the numbers before and after 0? Can you find any generalisations about the numbers?

3 Two of the terms in the number sequence below are incorrect. Describe how you find them and state the correct terms.

2, 9, 15, 21, 30

Suggestion: Extension of the problem
Can the hot air ballon rise to a height 50 m ? 60 m ?

Сунуш: Маселени кеңейтүү

Ысык аба шары 50 м бийиктикке көтөрүлө алабы? 60 м ?

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Lesson 2 (40 min)

Lesson development: Learn (b) **C-P-A** **(10 min)**	**Let's Learn (b)** • Display and read the problem. This practice requires students to count on in 8s from 0. • Have students work in pairs. • Get students to measure and cut three strips of paper that are each 8 cm long. Then have them place the strip at the 2-cm mark of a metre rule and join the next strip of paper and the following strip of paper to demonstrate the increasing number sequence when they count on. Then get students to observe the decreasing number sequence when they remove the number strips. • Have a volunteer illustrate counting on in 8s by drawing a number line on the board. • Have students practise what is common in the number sequences when they count on or count back by asking: - How can you find the height of the hot air balloon at 2s and 3s? (*Expected answer: Every second, the hot air balloon rises by 8 m. I can count on in 8s. The height of the hot air balloon at 2 s and 3 s will be 18 m and 26 m, respectively.*) - How can you find the height of the hot air balloon if it continues to rise for another second? *(Expected answer: I can count on in 8s to find the height of the balloon at 4 s as 34 m.)* • Invite a few volunteers to share their discussions. • Facilitate a class discussion by asking: - Do you agree with them? - Why do you disagree?
Lesson development: Independent Practice (25 min)	**Let's Practise** • Allow students to try the questions independently. Assess students as they work and give assistance if help is required. • Go through the questions and encourage students to explain their answers. Have students check if their answers are reasonable. Select students who have different answers and have the rest of the class discuss if it can be an alternative answer. - (1) The question requires students to count on and back in 7s, 8s and 9s to include negative numbers. Have students count on and back in constant steps of 7s, 8s and 9s from –11 as a class. Provide students with counters and number strips to help them. Then get them to check their answers by comparing their answer to the next term provided in the sequence. - (2) The question requires students to count back in 9s to include negative numbers. Ensure students can count back in 9s from 27 so that they can tell what is the same and different about the numbers before and after 0. Have students use a number line to help them compare the numbers. Then let them practise **generalising (TWM.02)** about the numbers. - (3) The question requires students to count on and back in 7s, 8s and 9s to include negative numbers. Have students find the term-to-term rule in the number pattern to identify which of the two terms are incorrect. Ask students to identify

	the correct numbers to replace the two numbers in the sequence. • Make a note of the gaps in students' understanding. Revisit the sections they need more help with. • Have students check if their answers are reasonable and to share if they have different answers from their classmates. • Refer students back to Thinking Cap. Allow them to revisit the responses that were noted on the board at the beginning of the lesson to address misconceptions, if any.
Lesson Wrap Up (5 min)	**I Can…** • Have students reflect on what they have learnt. • Ask students about the difficulties they face when counting on and back for the sequences in 7, 8, and 9 with negative numbers. Invite volunteers to share how they overcame their difficulties. **Activity Book** • Assign Activity Book Worksheet 2A for students to complete at home.

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