



Mainstreaming Disability Inclusion in JICA Projects

Sector-Specific Guidance Note

Education

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Sections 1,2,3 provide an overview for those seeking to understand the basics, while Section 4 offers specific steps for mainstreaming disability inclusion.

Main Target Areas Covered by this Guidance Note

The Japan International Cooperation Agency (JICA) Global Agenda for the education sector is structured around a set of agenda clusters. Within the “Cluster for Improving Education that Leaves No One Behind,” JICA specifies policies aimed at mainstreaming disability inclusion and addressing considerations for minority groups in planning and implementation of education projects [1].

JICA Global Agenda explicitly requires disability inclusion across all education projects. However, this Guidance Note identifies three sub-sectors as primary areas of focus, drawing on other JICA Global Agenda clusters within the education sector. It should be noted that, although technical education and vocational training projects are managed by multiple departments within JICA, the technical education and vocational training referred to in this Guidance Note specifically covers projects implemented for public vocational training institutions that serve as pathways following lower secondary education.

- 1) Basic Education** (Learning Improvement Cluster focused on textbook and teaching material development, Community Collaborative Education Improvement Cluster): Improving children's learning outcomes, developing textbook and teaching materials, strengthening community collaboration, and enhancing school management.
- 2) Higher Education** (Hub University Strengthening Cluster)
- 3) Technical Education and Vocational Training**

1. Basic Understanding of Education for Learners with Disabilities

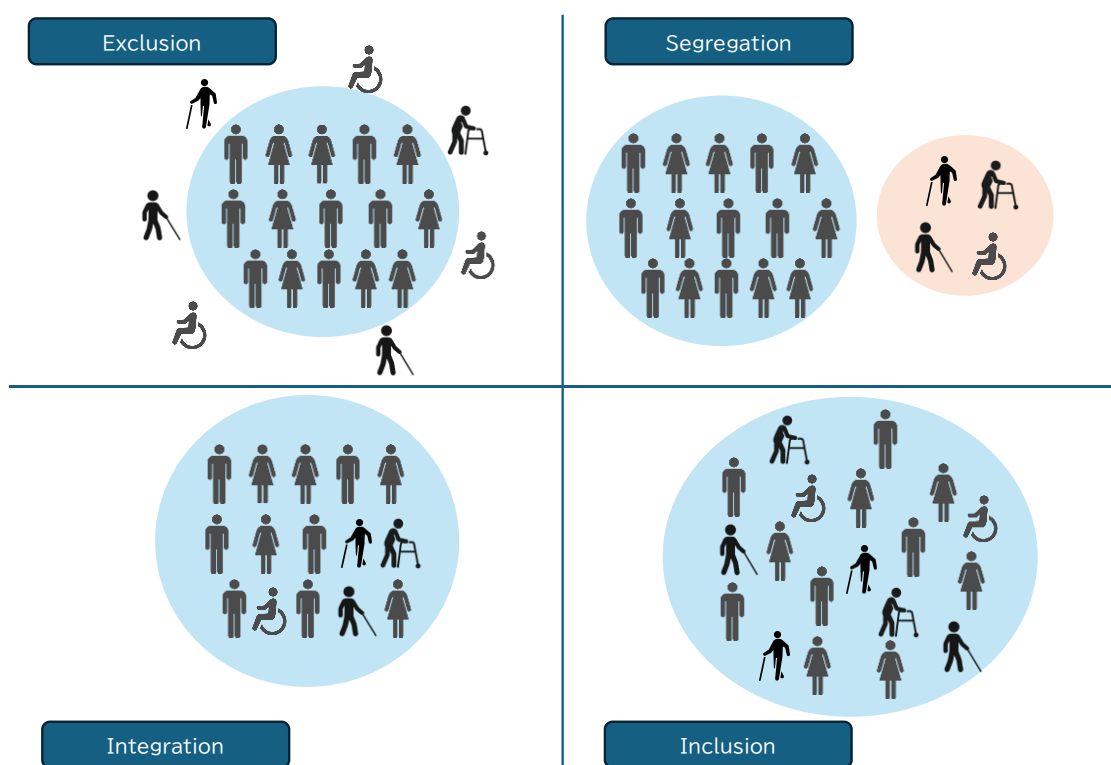
This section explains the fundamental concepts essential for promoting disability inclusion in the education sector.

(1) Discussion on Educational Approaches for Learners with Disabilities

There are four forms of education for learners with disabilities:

- **Exclusion:** Learners with disabilities are excluded from educational settings.
- **Segregation:** Learners with disabilities are educated separately in special settings.
- **Integration:** Learners with disabilities learn in the same setting as others but are expected to follow standardized educational content without adequate adaptation.
- **Inclusion:** Diversity is respected and education is provided in ways that are tailored to individual learning needs.

Figure: Forms of Education for Learners with Disabilities



Source: Developed based on [2]

- The concept of “normalization,” proposed in 1959, gained widespread acceptance and contributed to the advancement of integrated education. However, its limitations, particularly its inability to adequately address individual educational

needs, led to a shift in thinking. In response, the 1994 Salamanca Statement emphasized the importance of inclusive education, marking a significant turning point in international education policy. Since then, the global movement toward inclusive education has continued to progress. The Salamanca Statement highlights the principle that all children should attend their local schools and receive education that is responsive to their individual needs within those settings. In the same way, mainstreaming disability inclusion requires moving beyond a binary distinction between “people with disabilities” and “people without disabilities.” Instead, it is grounded in the understanding that society is composed of diverse individuals and that efforts should focus on eliminating exclusion in all its forms.

- General Comment¹ No. 4 of the Convention on the Rights of Persons with Disabilities (CRPD) clarifies the distinctions between exclusion, segregation, integration, and inclusion in paragraph 11. It specifically emphasizes that “*Inclusion* involves a process of systemic reform embodying changes and modifications in content, teaching methods, approaches, structures and strategies in education to overcome barriers” [3].

(2) Mainstreaming Disability Inclusion in Education and Inclusive Education

- In this Guidance Note, mainstreaming disability inclusion in education sector is defined as “efforts to ensure that learners with disabilities are not left behind in JICA's education sector projects.”
- Mainstreaming is a concept that originated from the civil rights movement in the United States, which aimed to eliminate racial discrimination. It is grounded in the principle of guaranteeing educational opportunities for diverse learners, including those with disabilities. In the United States, the Individuals with Disabilities Education Act (IDEA) mandates the provision of a free appropriate public education in the least restrictive environment. Under this law, an Individualized Education Program (IEP) team, composed of parents, teachers, and other relevant professionals, develops an IEP tailored to each learner's specific educational needs.
- Inclusive education, in contrast, is an approach that respects all differences—not just disabilities—and ensures equal educational opportunities for all learners. The

¹ Official documents prepared by the UN Committee on the Rights of Persons with Disabilities regarding key provisions where interpretation by States Parties is an issue. These documents contain explanations of the Convention and specific methods for its implementation. In August 2016, General Comment No. 4 on the Right to Inclusive Education was adopted. The views on inclusive education are cited in Appendix 3.

CRPD recognizes that inclusive education is a child's right and calls for the transformation of school culture and policies to create an environment in which all learners can fully participate and learn.

(3) Universal Design for Learning (UDL) [4]

- Universal Design for Learning (UDL) is an educational approach designed to make learning accessible to all learners, regardless of disability. Instead of requiring learners with disabilities to adapt to traditional instruction, UDL focuses on making teaching methods flexible and adaptable. This approach is advocated by the American nonprofit organization CAST and is guided by three core principles.

Principle	Perspectives on Learning	Examples
Principle I: Provide multiple means of Representation (The "WHAT" of Learning)	To assist in understanding the information	<ul style="list-style-type: none"> • Printed materials + digital materials • Add textual explanations to figures and tables • Show procedures step by step
Principle II: Provide multiple means of Action and Expression (The "HOW" of Learning)	Approaches to learning and methods of expression	<ul style="list-style-type: none"> • Utilizing voice input and calculators • Providing alternative methods for operating computers besides the mouse • Offering multiple presentation methods
Principle III: Provide multiple means of Engagement (The "WHY" of Learning)	Motivation for learning	<ul style="list-style-type: none"> • Learners can choose task difficulty and tools • Set up a safe space • Establish classroom routines

(4) Prohibition of Discrimination in Education

- Discrimination on the basis of disability is prohibited under the CRPD. Educational institutions are obligated to provide a discrimination-free environment by implementing reasonable accommodations.
- Reasonable accommodations refer to the modifications or adjustments that educational institutions make on an individual basis to ensure that learners with disabilities can exercise their right to education on an equal basis with other learners.
- Educational institutions are generally required, upon request from the learner or their representative, to understand the learner's circumstances and specific needs, reach an agreement with the learner or their guardian on the content of the reasonable accommodations, and provide the necessary accommodations to ensure the learner can access education on an equal basis with other.

2. Significance of Disability Inclusion in Education Sector

(1) Contribution to the Achievement of the Sustainable Development Goals (SDGs)

- Goal 4 of the SDGs aims to provide inclusive and equitable quality education for all and promote lifelong learning opportunities. It emphasizes educational equity, regardless of disability status, country or region, or economic background. Specific targets related to disability are outlined as follows [5]:

Target 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

Indicator 4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated.

Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

Indicator 4.a.1 Proportion of schools offering basic services, by type of service. (d) adapted infrastructure and materials for students with disabilities.

- In 2015, the Incheon Declaration and the Education 2030 Framework for Action were adopted, establishing a shared global vision for educational development to achieve Goal 4 of the SDGs. The pillars of this vision are “access,” “inclusion,” “equity,” “gender equality,” and “lifelong learning,” which collectively aim to ensure quality learning opportunities for all learners.

(2) Implementation of the Convention on the Rights of Persons with Disabilities (CRPD) [6]

- Efforts to mainstreaming disability inclusion in education are essential for States Parties to fulfill their obligations under the CRPD.

- Article 24 “Education,” contains the most related provisions. Below are excerpts of key education-related obligations required by States Parties.

Article 4 - General obligations

To promote the training of professionals and staff working with persons with disabilities in the rights recognized in this Convention so as to better provide the assistance and services guaranteed by those rights.

Article 6 - Women with disabilities

States Parties recognize that women and girls with disabilities are subject to multiple discrimination, and in this regard shall take measures to ensure the full and equal enjoyment by them of all human rights and fundamental freedoms.

Article 8 - Awareness-raising

To promote recognition of the skills, merits and abilities of persons with disabilities, and of their contributions to the workplace and the labour market.

Fostering at all levels of the education system, including in all children from an early age, an attitude of respect for the rights of persons with disabilities.

Article 24 - Education

States Parties recognize the right of persons with disabilities to education. With a view to realizing this right without discrimination and on the basis of equal opportunity, States Parties shall ensure an inclusive education system at all levels and lifelong learning.

Persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability.

States Parties shall ensure that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.

Article 27 - Work and employment

Enable persons with disabilities to have effective access to general technical and vocational guidance programmes, placement services and vocational and continuing training.

(3) Contribution to JICA Global Agenda

- JICA's Global Agenda in the education sector aims to provide quality education that helps build societies in which all people can live with dignity.
- Within the “Leaving No One Behind Education Improvement Cluster,” one of JICA’s four cluster project strategies, cooperation specifically targeting learners with disabilities is being considered and implemented. However, to ensure quality educational opportunities for all children, it is essential to mainstream disability inclusion across all education projects.

3. Challenges in the Education Sector from a Disability Perspective

(1) Restricted access to education: Low enrollment rates among learners with disabilities [7]

- Approximately 7% of children aged 10 to 17 with disabilities have never attended school, compared with 5% of children without disabilities.
- School enrollment rates for children with disabilities show a small gender gap at the primary education level. However, at the lower secondary level, the out-of-school rate rises to 20% for girls with disabilities compared with 14% for boys with disabilities, highlighting a widening gender disparity.
- The enrollment rate for children with disabilities declines sharply as education level increases, with 32% of children at upper secondary education age not enrolled in school.
- Children with learning disabilities or intellectual disabilities often struggle to keep up with the pace of learning as they progress through grades, which increases their risk of dropping out.

(2) Insufficient educational opportunities tailored to the needs of learners with disabilities [8] [9]

- Even when learners with disabilities are enrolled in school, a major challenge persists: they often do not receive an education that meets their learning needs. According to a United Nations Children’s Fund (UNICEF) study, learners with disabilities are 42% less likely than their peers without disabilities to acquire basic reading and numeracy skills.

- UNICEF's survey report conducted in Europe and Central Asia highlights that outdated curricula and teaching methods hinder quality learning for learners with disabilities.
- Many mainstream schools lack the necessary systems and preparation to effectively support learners with disabilities.
- Teachers often lack the skills, time, and support required to provide appropriate education, resulting in learners with disabilities consistently missing out on necessary guidance.

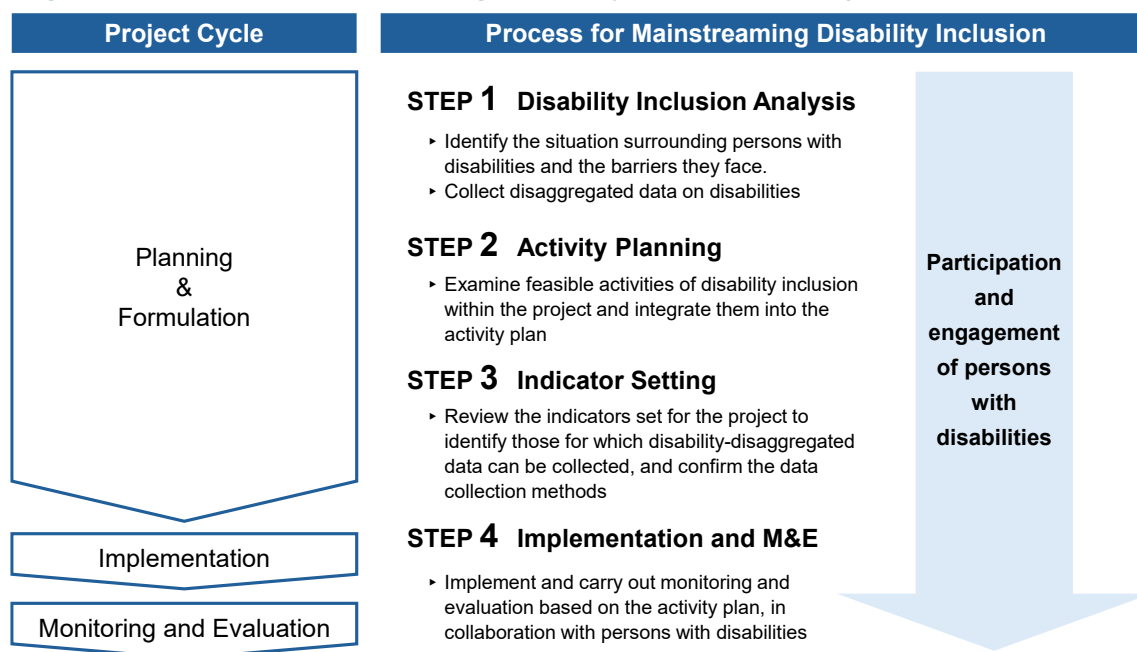
(3) Exclusion of learners with disabilities from the general education system [7] [10]

- Learners with disabilities may be excluded from the mainstream education and placed in segregated learning environments. There is a need to establish systems and environments where learners with and without disabilities learn together.
- While 87% of countries have laws guaranteeing the right to education for learners with disabilities, only 17% guarantee inclusive education.

4. How to Mainstream Disability Inclusion in Projects: Steps for Implementation

- Mainstreaming disability inclusion in projects means incorporating and implementing a disability perspective at all stages of project planning, implementation, monitoring, and evaluation. This Guidance Note introduces methods for mainstreaming disability inclusion in the four STEPs as shown in the figure below.
- STEPs 1-3 correspond to the project formulation stage of the project cycle, and STEP 4 to the implementation and post-completion stage. While keeping all STEPs through project completion in mind, it is particularly important to work on disability inclusion at **the project formulation stage**.
- At the stage of obtaining the Official Request Letter from the partner government, it is important to consult with counterparts and the JICA local office to ensure that efforts for disability inclusion are included and that there is no risk of excluding persons with disabilities.

Figure: Process for Mainstreaming Disability Inclusion in Projects



- The table below shows when each STEP applies within the project cycles for technical cooperation, official development assistance (ODA) loans, and grant aid.

Scheme	Project Cycle	STEP
Technical Cooperation	At the time of preparing the Terms of Reference (TOR) for the data collection survey, detailed or basic planning survey.	STEP 1 (Analysis)
	At the time of drafting Main Point Discussed in the Record of Discussion (R/D) (activities related to disability inclusion), PDM, and Ex-ante Evaluation document.	STEP 2 (Activity Planning) STEP 3 (Indicator Setting)
	At the time of preparing the TOR of the project, implementing the project, and reviewing a monitoring sheet.	STEP 4 (Implementation, Monitoring & Evaluation)
ODA Loans	At the time of preparing the TOR for the data collection survey and preparatory survey, and drafting Project Planning Document (1).	STEP 1 (Analysis)
	At the time of preparing the Minutes of Discussion (M/D), Project Planning Document (2)/(3), appraisal document, and drafting Ex-ante Evaluation document.	STEP 2 (Activity Planning) STEP 3 (Indicator Setting)
	At the time of supervising the project and reviewing Project Status Report.	STEP 4 (Implementation, Monitoring & Evaluation)
Grant Aid	At the time of preparing the TOR for the data collection survey and Preparatory Survey, and drafting Project Planning Document (1).	STEP 1 (Analysis)
	At the time of preparing the Minutes of Discussion (M/D), Project Planning Document (2)/(3), appraisal document, and drafting Ex-ante Evaluation document.	STEP 2 (Activity Planning) STEP 3 (Indicator Setting)
	At the time of supervising the project and reviewing Project Status Report.	STEP 4 (Implementation, Monitoring & Evaluation)

STEP 1 Disability Inclusion Analysis

- During project planning and formulation, conduct a disability inclusion analysis to assess the situation of persons with disabilities within the sector and identify the barriers they face. Additionally, collect disability-disaggregated data regarding target groups.
- Use the disability inclusion analysis to ensure that the project design does not pose any risk of excluding persons with disabilities, or create disadvantages or negative impacts for them. Carefully review and confirm these aspects during the planning process.

[JICA Country-Specific Disability-Related Information](#) (currently available in Japanese language only) contains disability-related information for each of the 55 countries where JICA implements projects. If information exists for the target country, it is recommended to check it first.

As an English-language information source, the [World Bank Group's Disability Data Hub](#) provides country-specific data.

1) Reflect: The relationship between the project and disability

- Clearly define how disability intersects with the project. Identify the components of the project that have the strongest relevance to persons with disabilities.

2) Ask: Consult with persons with disabilities or their representative organizations to understand the barriers they encounter

- Engage and consult with persons with disabilities and/or their representative organizations about the kind of barriers that prevent access to and participation in nutrition programs and services targeted by the project. Make sure to seek input from a wide range of individuals, including persons with diverse types of disabilities and women with disabilities.
- Then, request their participation in STEPs 2-4 described in the following sections.
It is crucial to involve persons with disabilities at all stages.

CHECK

Including methods for engaging organizations of persons with disabilities, the **Guidance Note for Across All Thematic Areas** introduces the following under “Section 4: Specific Approaches for Mainstreaming Disability Inclusion.”

- Methods for Engaging with Persons with Disabilities
- Forms of Participation of Persons with Disabilities
- General Accessibility Measures and Reasonable Accommodations
- Information and Communication Accessibility
- Inclusive Events (Meetings, Seminars, Training, etc.)

- Below are sample questions. Additionally, please refer to Appendix 1 for examples of barriers.

Barriers	Examples
Institutional Barriers	<ul style="list-style-type: none"> • What barriers exist in the current educational system design that prevent the participation of persons with disabilities? (For example, there are no regulations regarding the education of learners with disabilities, and segregated education is being provided.)
Physical Barriers	<ul style="list-style-type: none"> • What physical barriers exist in educational institutions? <p>Examples:</p> <ul style="list-style-type: none"> - Availability of ramps and barrier-free restrooms. - Availability of routes allowing wheelchair users to commute safely. - Availability of guidance systems and support enabling learners with visual impairment to navigate campus independently. - Availability of staff to support learners with disabilities.
Communication Barriers	<ul style="list-style-type: none"> • What information barriers exist in educational institutions? <p>Examples:</p> <ul style="list-style-type: none"> - Availability of information support such as sign language interpretation and captions for learners with hearing impairments. - Availability of Braille materials and enlarged materials for learners with visual impairments, and availability of ICT devices (such as tablets) for learners with reading and writing difficulties. - Lack of information provided in easy-to-understand language and at an appropriate pace.
Attitudinal Barriers	<ul style="list-style-type: none"> • Are there prejudices among educators and community members regarding the education of persons with disabilities or children with disabilities? • Do learners with disabilities experience bullying or violence inside or outside of school?

3) Check: Collection of disability-disaggregated data²

Data	Information Sources
<ul style="list-style-type: none"> Percentage of learners with disabilities at the educational level targeted by the project (e.g., percentage of children with disabilities in elementary education) Percentage of learners with disabilities at the educational institutions targeted by the project (e.g., percentage of children with disabilities at the targeted elementary school) Types of disabilities among children and individuals with disabilities attending the educational institutions targeted by the project Completion rate of learners with disabilities at the educational level or institution targeted by the project (include employment rate for technical education/vocational training and higher education) 	<ul style="list-style-type: none"> Government statistics Reports from ministries and agencies related to persons with disabilities Documents from educational institutions Interviews with persons with disabilities and their representative organizations Interviews with parents (and organizations) of children with disabilities

4) Explore: Situation of persons with disabilities within the sector

Key Information to Identify	Information Sources
<ul style="list-style-type: none"> Existence of content addressing persons with disabilities or disability inclusion perspectives in education-related laws, policies, strategies, action plans, etc. Whether the educational institution targeted by the project has a policy on inclusion of individuals with disabilities, and the content of that policy. 	<ul style="list-style-type: none"> Government documents Documents from educational institutions
<ul style="list-style-type: none"> Descriptions related to Articles 4 in CRPD Concluding Observations 	<ul style="list-style-type: none"> CRPD Concluding Observations <p>* On the search page of the CRPD (States Parties Reporting), specify the country and the type of document.</p>

² Data disaggregated by disability status and type of functional limitation, comparable to sex- and age-disaggregated data.

Key Information to Identify	Information Sources
<p>Stakeholders: Resources and Partners for Implementation</p> <ul style="list-style-type: none"> Ministries and departments responsible for persons with disabilities. Organizations of persons with disabilities. JICA's experience in disability and development (technical cooperation, JOCV, grassroots projects, etc.) International and bilateral agencies with experience related to mainstreaming disability inclusion in the education sector. 	<ul style="list-style-type: none"> JICA Country-Specific Disability-Related Information (currently available in Japanese only) World Bank Group Disability Data Hub >> Economies

STEP 2 Activity Planning

(see Appendix 2 for Examples of Good Practices)

- Based on the situation and barriers faced by persons with disabilities in the sector identified through the disability inclusion analysis in STEP 1, consider feasible activities within the project and incorporate them into the activity plan.
- Furthermore, when planning the overall project, ensure that the project's objectives and plans promote the inclusion and participation of persons with disabilities and do not promote their segregation or exclusion.

Examples of Activities to Promote Disability Inclusion

Note: Priority and feasible activities should be determined through consultation with stakeholders, including persons with disabilities or their representative organizations.

Barriers	Example Activities
Physical Barriers (Facility equipment aspects such as stairs and steps)	<ul style="list-style-type: none"> Install non-slip corridors, stairs, ramps, and elevators to ensure access to all spaces within educational institution buildings. Ensure door widths sufficient for wheelchair passage. Install handrails on corridors and stairs. Provide/support transportation options such as school buses. Install accessible restrooms for everyone. Assign support staff during commuting, learning, etc.
Communication Barriers (Presentation of information that is difficult for specific individuals to understand)	<ul style="list-style-type: none"> Prepare audio-based information for learners with visual impairments. Prepare teaching materials and tools such as digital resources, screen readers, Braille materials, and magnifiers. Prepare text-based materials for learners with hearing impairments.

Barriers	Example Activities
	<ul style="list-style-type: none"> • Provide sign language interpreters. • Prepare alternative communication methods such as written materials and communication boards for learners with language impairments. • Provide information using visually clear handouts and easy-to-understand language for learners with cognitive characteristics. • Add guidance using illustrations and pictograms throughout all spaces in educational institution buildings. <p>※ Appendix 4 contains “Considerations in the Development of Textbooks and Other Learning Materials — Creating Materials with a Conscious Awareness of Universal Design —”. It is packed with tips for developing teaching materials that are easy for everyone to use.</p>
Institutional Barriers (Education system, curriculum, learning activities)	<ul style="list-style-type: none"> • Collect disability data through national census and surveys, and formulation and reliable implementation of education policies based on this data³. • Secure budgets to promote inclusive education⁴. • Promote participation of persons with disabilities and their guardians in the process of designing education policies and systems. • Clearly state the provisions for learners with disabilities and prohibitions against discriminations in the policies and plans of educational institutions. • Provide reasonable accommodation during tests and examinations. • Ensure flexibility in curriculum achievement goals and assessment methods. • Implement teacher training in instructing learners with disabilities. • Introduce components on instructing learners with disabilities into teacher education curriculum.
Attitudinal Barriers (Negative attitudes, discrimination, lack of understanding)	<ul style="list-style-type: none"> • Conduct training sessions for staff, parents, and community members to deepen understanding of disabilities. • Introduce a peer support system where learners assist one another.

Source: Developed based on [11] [12] ,etc.

³ The Washington Group's short set on functioning and child functioning modules can be utilized as data collection tools. <https://www.washingtongroup-disability.com/question-sets/wg-short-set-on-functioning-wg-ss/>

⁴ Learners with disabilities require 2 to 2.5 times more financial support than students without disabilities, and countries such as the United States, Canada, and Serbia use this model to determine their budgets [11].

STEP 3 Indicator Setting

- Among the indicators set for the project (indicators for project purpose and outputs), review which indicators can collect disability-disaggregated data and confirm the data collection methods.

Example:

When “children's active learning time” is set as a project goal indicator, it should be explicitly stated that separate data (disability-disaggregated data) will also be collected for learners with disabilities.

- Also, consider indicators to measure outputs (changes) expected from activities planned in STEP 2, and integrate them into existing indicators or add them. Below are examples of indicators incorporating a disability perspective.

Example Indicators

- Whether consultation with persons with disabilities was conducted during the development process of policy document (systems, strategies, guidelines, etc.); overview of consultation, if conducted.
- Existence or number of policy documents reflecting disability perspectives (e.g., provisions concerning educational guarantees for learners with disabilities, provisions concerning budget allocation for reasonable accommodations, etc.).
- Percentage of learners with disabilities at the educational level or institution targeted by the program.
- Number of teacher training sessions on instructional methods for learners with disabilities, and participants' level of understanding.
- Availability/number of reasonable accommodations provided to learners with disabilities at the educational institution targeted by the program.
- Whether learning assessment criteria adapted for learners with disabilities have been established.
- Formats of textbooks and teaching materials. Whether they are available in various formats such as audio, print, electronic, etc.
- In cases involving building renovations or new construction, availability of ramps and accessible restrooms.

STEP 4 Implementation and Monitoring & Evaluation

- When implementing and monitoring activities, collaborate with persons with disabilities (and/or organizations of persons with disabilities) to confirm whether activity content is appropriate, and whether activities, deliverables, and services being implemented are accessible and user-friendly.
- Also, pay close attention to whether the promotion and implementation of project activities respect the diversity of persons with disabilities and are conducted in a manner that promotes their dignity, rights, and potential.
- During evaluation, assess the achievements of activities from a disability inclusion perspective, their implementation process, and outcomes. Below are sample questions designed from a disability inclusion perspective.

Guiding Questions from a Disability Inclusion Perspective

Six Evaluation Criteria	Sample Questions
Relevance	<p>Counterpart Country's Development Policies and Needs</p> <ul style="list-style-type: none"> • Do disability inclusion activities align with priority issues and contents stated in the counterpart country's disability policy or sector policy? <p>Appropriateness of Project Plan and Approaches</p> <ul style="list-style-type: none"> • Was mainstreaming of disability inclusion considered during project formulation? • Was information collected from persons with disabilities and organizations of persons with disabilities during project formulation? • Was participation of persons with disabilities promoted in the project implementation process? • Were methods employed to avoid excluding specific types of disabilities or specific groups of persons with disabilities (e.g., women with disabilities, ethnic minorities, or other minorities)?
Coherence	<p>Consistency with Japanese Government/JICA Development Cooperation Policies and Coordination with Other JICA Projects</p> <ul style="list-style-type: none"> • Were disability inclusion activities consistent with Japanese government and JICA policies? • Was coordination with other JICA projects undertaken to promote disability inclusion activities? <p>Coordination with International Frameworks</p> <ul style="list-style-type: none"> • Was the project consistent with the CRPD? • Did disability inclusion activities contribute to achieving global goals such as SDGs?

Six Evaluation Criteria	Sample Questions
Effectiveness	<ul style="list-style-type: none"> • To what extent were outcomes achieved for persons with disabilities through disability inclusion activities? • Did disability inclusion activities contribute to achieving project purpose and outputs?
Impact	<ul style="list-style-type: none"> • Can positive long-term or indirect effects be expected from disability inclusion activities? For example, fostering leadership of persons with disabilities, participation of persons with disabilities in decision-making processes, and institutional reforms. • Have any negative indirect effects emerged because disability inclusion activities were not implemented or because disability inclusion analysis was insufficient? For example, exacerbating discrimination or stigma against persons with disabilities.
Efficiency	<ul style="list-style-type: none"> • Were disability inclusion activities conducted within the planned budget and timeframe? • Was project efficiency being prioritized at the expense of excluding specific groups such as persons with disabilities?
Sustainability	<ul style="list-style-type: none"> • Will persons with disabilities and their representative organizations continue to be involved in the disability inclusion process? • Is continuation of outcomes achieved for persons with disabilities appropriately planned? • Will the services and systems established in the project continue to be expanded and maintained in a manner that ensures equality and participation of persons with disabilities?

Appendix 1: Barriers to Access and Participation for Persons with Disabilities in Education Sector

Learners with disabilities face multiple barriers—institutional, physical, informational, and attitudinal—when accessing educational environments and receiving education.

Designing education systems based on the rights of persons with disabilities requires a perspective that systematically identifies these barriers and actively minimizes the risk of exclusion.

Main Barriers Surrounding Learners with Disabilities in Education

Barriers	Examples
Institutional Barriers	<ul style="list-style-type: none"> • Policies and strategies are not developed based on consultation with key stakeholders (including relevant government ministries [responsible for education, employment, buildings, and public transportation], social partners, and civil society, including representatives of persons with disabilities). • While laws and policies exist to provide education to learners with disabilities, strategies and plans for inclusive education have not been developed. • Assessment criteria do not meet the diverse needs of all learners. • Due to insufficient knowledge, understanding, and skills among teachers, classroom management and teachers' guidance that address learners' diverse needs are not provided.
Physical (Environmental) Barriers	<ul style="list-style-type: none"> • Educational institutions lack ramps and accessible restrooms, preventing wheelchair users and learners with physical disabilities from attending school. • Due to the long distance to school and poor road conditions, wheelchair users and students with physical disabilities cannot attend. • Learners with visual impairments find it difficult to navigate classrooms and hallways independently. • Due to the shortage of support staff who can assist learners with disabilities, they are unable to study on an equal basis with other learners. • The height and arrangement of laboratory desks and equipment are not designed with accessibility in mind, making it difficult for wheelchair users and learners with physical disabilities to participate in experiments.

Barriers	Examples
Communication Barriers	<ul style="list-style-type: none"> • For learners with hearing impairments, the absence of sign language interpreters creates an information gap. • For learners with visual impairments, the lack of Braille materials or enlarged learning resources results in an information gap. • For learners who face difficulties in reading and writing, the absence of ICT devices such as tablets leads to an information gap. • In laboratory classes and research activities, explanations regarding the use of equipment are not provided with visual or auditory accessibility in mind. • There is a lack of clear expression and appropriate pacing in the provision of information.
Attitudinal Barriers	<ul style="list-style-type: none"> • The belief that learners with disabilities cannot learn, along with prejudice based on appearance, held by educators, classmates, parents, and community members, hinders access to education and often leads to dropout. • Due to prejudice and discrimination against persons with disabilities in employment, they are unable to receive technical education or vocational training. • The notion that students with disabilities have no reason to pursue higher education prevents access to universities, and even after admission, they may be denied reasonable accommodations or face discrimination from other students. • Women with disabilities are at higher risk of experiencing bullying and gender-based violence both inside and outside of school.

Source: Developed based on [13] [14] [15] [16]

Appendix 2: Examples of Good Practices in Mainstreaming Disability Inclusion in Education Sector

(1) World Bank Efforts to Promote Disability Inclusion in Education Projects (Guyana) [17]

The World Bank, through the Guyana Education Sector Improvement Project (2017–2025), has supported improvements in pre-primary, primary, and lower secondary education, with a focus on enabling learners with disabilities to study in their local schools. Under this project, the following seven key activities have been implemented.

- **Decision-making and participation:** Involve organizations such as the National Disability Council in the planning stage of curriculum revision.
- **Attitude improvement:** Conduct training programs to foster positive attitudes among teachers toward learners with disabilities.
- **Accessibility:** Ensure that learning materials are inclusive with respect to disability, gender, and culture.
- **Employment:** Promote diversity among teachers and encourage the recruitment of teachers with disabilities.
- **Monitoring:** Establish intermediate outcome indicators to track the number of teachers participating in awareness-raising activities aimed at eliminating unconscious bias against learners of different genders, races, ethnicities, and abilities.
- **Consultation:** Conduct consultations with persons with disabilities and their representative organizations throughout the project period.
- **Evidence-based policymaking:** Select schools attended by learners with disabilities as target schools for project interventions.

(2) Report on Good Practices of Disability Inclusion in the Education Sector by Save the Children [18]

Save the Children has compiled best practices of disability inclusion in education projects implemented across nine countries. In Kosovo, the project supported inclusive education in line with the government's policy of transforming existing special schools into resource centers and special classrooms into resource rooms. In collaboration with civil society organizations, the project implemented the following activities.

- Promote school enrollment for children with disabilities and those from marginalized groups, including Roma, Ashkali, and Egyptian⁵ communities.

⁵ Ethnic minorities residing in Kosovo.

- Transform schools into safe, inclusive, and interactive learning environments.
- Empower children, parents, and communities to claim their educational rights.

Specifically, education assessment teams were established at the municipal level to evaluate the educational needs of children with disabilities. In collaboration with organizations of persons with disabilities, awareness-raising activities were conducted for parents on children's rights. As a result, members of the education assessment teams began participating in planning related to human and material resources at municipal education departments, and they became able to evaluate children from the perspective of inclusive education. Additionally, teacher training on inclusive education and the development of individual education plans (IEPs) were carried out, enabling teachers to design lessons that are more accessible, participatory, and responsive to the needs of all children.

(3) Asian Development Bank (ADB) : Ensuring Accessibility in Higher Education Institutions (Solomon Islands) [19]

The Asian Development Bank (ADB), through the *Higher Education in the Pacific Investment Program (Tranche 2)* in the Solomon Islands, supported efforts to reduce disparities in higher education and promote women's participation in science, technology, and engineering fields. As part of the program's support, a new campus of the University of the South Pacific was constructed. The campus was designed to ensure female students' safety and includes accessible toilets, corridors, and parking facilities, integrating considerations for both disability and gender into the building's design.

(4) Disability Inclusion in Technical Education and Vocational Training (Bangladesh) [20]

In the area of technical education and vocational training, the Government of Bangladesh, with support from the International Labour Organization (ILO), formulated the National Skills Development Policy to promote the inclusion of persons with disabilities. The policy stipulates measures such as reserving 5% of admission slots for persons with disabilities in all technical education and vocational training institutions, providing scholarships, accommodation, and transportation, and ensuring accessible facilities. Furthermore, all institutions are required to incorporate considerations for persons with disabilities into their annual plans, budgets, and staff performance evaluations. The policy also promotes the recognition of outstanding principals and the development of a database of reasonable accommodations for employers, thereby facilitating the employment of persons with disabilities.

Appendix 3: Excerpt from the Committee on the Rights of Persons with Disabilities, *General Comment No. 4 (2016) on the Right to Inclusive Education* [3]

10. Inclusive education can be understood as:

- (a) A fundamental human right of all learners. Notably, education is the right of the individual learner and not, in the case of children, the right of a parent or caregiver. Parental responsibilities in this regard are subordinate to the rights of the child;
- (b) A principle that values the well-being of all students, respects their inherent dignity and autonomy, and acknowledges individuals' requirements and their ability to effectively be included in and contribute to society;
- (c) A means of realizing other human rights. It is the primary means by which persons with disabilities can lift themselves out of poverty, obtain the means to participate fully in their communities and be safeguarded from exploitation.³ It is also the primary means of achieving inclusive societies;
- (d) The result of a process of continuing and proactive commitment to eliminating barriers impeding the right to education, together with changes to culture, policy, and practice of regular schools to accommodate and effectively include all students.

11. The Committee highlights the importance of recognizing the differences between exclusion, segregation, integration and inclusion. Exclusion occurs when students are directly or indirectly prevented from or denied access to education in any form. Segregation occurs when the education of students with disabilities is provided in separate environments designed or used to respond to a particular impairment or to various impairments, in isolation from students without disabilities. Integration is the process of placing persons with disabilities in existing mainstream educational institutions with the understanding that they can adjust to the standardized requirements of such institutions.⁶ Inclusion involves a process of systemic reform embodying changes and modifications in content, teaching methods, approaches, structures and strategies in education to overcome barriers with a vision serving to provide all students of the relevant age range with an equitable and participatory learning experience and the environment that best corresponds to their requirements and preferences. Placing students with disabilities within mainstream classes without accompanying structural changes to, for example, organization, curriculum and teaching

⁶ A/HRC/25/29, para. 4 and UNICEF, *The Right of Children with Disabilities to Education: A Right-Based Approach to Inclusive Education* (Geneva, 2012).

and learning strategies, does not constitute inclusion. Furthermore, integration does not automatically guarantee the transition from segregation to inclusion.

12. The core features of inclusive education are:

- (a) A “whole systems” approach: education ministries must ensure that all resources are invested in advancing inclusive education and in introducing and embedding the necessary changes in institutional culture, policies and practices;
- (b) A “whole educational environment”: the committed leadership of educational institutions is essential for introducing and embedding the culture, policies and practices needed to achieve inclusive education at all levels and in all areas, including in classroom teaching and relationships, board meetings, teacher supervision, counselling services and medical care, school trips, budgetary allocations, any interaction with the parents of learners with and without disabilities and, when applicable, the local community or wider public;
- (c) A “whole person” approach: recognition is given to the capacity of every person to learn, and high expectations are established for all learners, including learners with disabilities. Inclusive education offers flexible curricula and teaching and learning methods adapted to different strengths, requirements and learning styles. This approach implies the provision of support, reasonable accommodation and early intervention so that all learners are able to fulfil their potential. The focus is on learners’ capacities and aspirations rather than on content when planning teaching activities. The “whole person” approach aims at ending segregation within educational settings by ensuring inclusive classroom teaching in accessible learning environments with appropriate supports. The education system must provide a personalized educational response, rather than expect students to fit the system;
- (d) Supported teachers: all teachers and other staff receive the education and training they need to give them the core values and competencies to accommodate inclusive learning environments, which include teachers with disabilities. An inclusive culture provides an accessible and supportive environment that encourages working through collaboration, interaction and problem-solving;
- (e) Respect for and value of diversity: all members of the learning community are equally welcome and must be shown respect for diversity irrespective of disability, race, colour, sex, language, linguistic culture, religion, political or other opinion, national, ethnic, indigenous or social origin, property, birth, age or other status. All students must feel valued, respected, included and listened to. Effective measures to prevent abuse and bullying are in place. Inclusion takes an individual approach to students;

- (f) A learning-friendly environment: inclusive learning environments are accessible environments where everyone feels safe, supported, stimulated and able to express themselves and where there is a strong emphasis on involving students in building a positive school community. Recognition is afforded to the peer group in learning, building positive relationships, friendships and acceptance;
- (g) Effective transitions: learners with disabilities receive support to ensure the effective transition from learning at school to vocational and tertiary education and, finally, to work. Learners' capacities and confidence are developed and learners receive reasonable accommodation, are treated with equality in assessments and examination procedures, and their capacities and attainments are certified on an equal basis with others;
- (h) Recognition of partnerships: teacher associations, student associations and federations, organizations of persons with disabilities, school boards, parent-teacher associations and other functioning school support groups, both formal and informal, are all encouraged to increase understanding and knowledge of disability. The involvement of parents or caregivers and the community is viewed as an asset that contributes resources and strengths. The relationship between the learning environment and the wider community must be recognized as a route towards inclusive societies;
- (i) Monitoring: as a continuing process, inclusive education must be monitored and evaluated on a regular basis to ensure that neither segregation nor integration are taking place, either formally or informally. According to article 33, monitoring should involve persons with disabilities, including children and persons with intensive support requirements, through their representative organizations, as well as parents or caregivers of children with disabilities, where appropriate. Disability-inclusive indicators must be developed and used in a manner consistent with the 2030 Agenda for Sustainable Development.

Appendix 4: Considerations in the Development of Textbooks and Other Learning Materials — Creating Materials with a Conscious Awareness of Universal Design —

This material is based on the experience of JICA's "Project for Mathematics Friendly Learning in Primary Education of Nicaragua (NICAMATE2)" and is intended to serve as a reference for developing learning resources that are accessible and easy to understand for all learners.

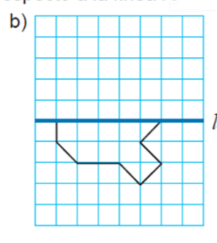
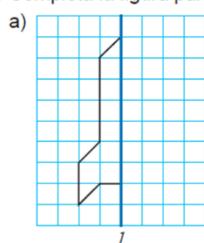
1. Visual Considerations

- Choose color combinations that are easy to distinguish for people with various types of color vision. (Example tools: [Color Universal Design Recommended Color Sets](#))
- After completing a draft, verify how colors appear using simulation tools. (Example tools: [Color vision simulator Application](#))

Type of Color Vision	Protanopia (Red-Weak)	Deuteranopia (Green-Weak)	Tritanopia (Blue-Weak)
Examples of Colors Hard to Distinguish	Red↔Black↔Dark Green Red↔Orange↔Brown Purple↔Blue	Red↔Orange↔Green Purple↔Blue Pink↔Grey	Blue↔Green Yellow↔Bright pink
Color Vision Simulator View	Red↔Black↔Dark Green Red↔Orange↔Brown Purple↔Blue	Red↔Orange↔Green Purple↔Blue Pink↔Grey	Blue↔Green Yellow↔Bright pink

- Create clear differences in brightness (contrast) or saturation, change shapes (e.g., solid and dashed lines), or add text labels.

1. Completa la figura para que sea simétrica respecto a la línea *l*.

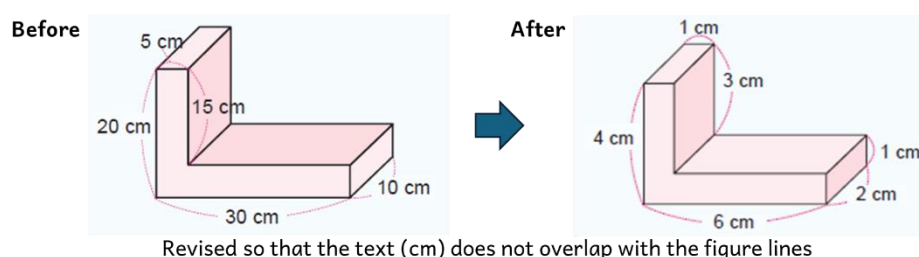


Line thickness: Line *l* is drawn with a thick line; other lines are thin.
Color contrast: Line *l* is shown in a darker color; other lines are lighter.
Text information: The line is clearly labeled as "*l*".

Before revision: Draw the figure that is symmetric with respect to the blue line.

After revision: Draw the figure that is symmetric with respect to line *l*.

- Especially in charts and graphs, ensure information can be identified without relying solely on color differences.
- Avoid overlapping text and graphics as much as possible. When unavoidable, add background colors to text to improve visibility.



2. Considerations for Text Information

- Use easy-to-read fonts. Consider changing fonts according to text size.
 - ✓ Uniform stroke thickness
 - ✓ Appropriate letter shapes, widths, and spacing
 - ✓ Minimal confusion between printed letters and handwritten forms

«Examples of English Fonts»

Commonly Available Fonts (standard installation)		
Arial	Simple and highly legible	Mathematics
Helvetica	Commonly used in Western textbooks	Mathematics
Verdana	Wider letterforms that remain readable at smaller sizes	Mathematics
Tahoma	Generous spacing that remains readable at smaller sizes	Mathematics
Educational and Specialized Fonts (installation required)		
Andika	Designed specifically for literacy and readability	Mathematics
Lexend	Designed to maximize readability and dyslexia-friendly	Mathematics
Sassoon Primary	Letterforms resemble children's handwriting	Mathematics

- Adjust text size, letter spacing, and line spacing based on developmental stages.
- Use concise expressions and avoid excessive amounts of text per sentence or per page.

Before Revision

Ejercicios

Calcula la razón en cada una de las siguientes situaciones y expresa la respuesta como número decimal y como fracción.

(Calculate the ratio in each of the following situations and express the answer as a decimal and as a fraction.)



After Revision

Ejercicios

Calcula la razón en cada caso y exprésala como número decimal y como fracción.

(Calculate the ratio in each case and express it as a decimal and as a fraction.)

3. Considerations for Language Use

- Adjust vocabulary and terminology in consideration of students' developmental stages and content learned in other subjects.
- When using difficult vocabulary or technical terms, provide annotations or visual explanations and consider including a glossary at the end of the material.
- Use consistent expressions for the same vocabulary and terminology throughout the material.

Example: Before the revision, there were four different expressions for "the ratio of A to B," which could potentially create a high cognitive load for students.

la razón de A en relación a B (*the ratio of A in relation to B*)

la razón de A respecto a B (*the ratio of A with respect to B*)

la razón que representa A respecto a B (*the ratio that A represents with respect to B*)

la razón de A entre B (*the ratio of A among B*)


➡ It was standardized to the clear and unambiguous expression "la razón de A en relación a B."

4. Considerations for Layout and Presentation

- Carefully plan line breaks.
 - ✓ Line breaks at periods, commas, or natural phrase boundaries improve readability.
 - ✓ Do not break words in the middle.
(For example, do not split multiplication into multipli- / -cation.)
 - ✓ Do not break technical terms. (For example, do not split *el máximo común divisor* [greatest common divisor] into *el máximo común / divisor*.)

Before Revision


Se puede simplificar la razón **a** : **b** dividiendo tanto **a** como **b** entre el máximo común divisor.



The ratio **a** : **b** can be simplified by dividing both **a** and **b** by the greatest common divisor.

After Revision

Se puede simplificar la razón **a** : **b** dividiendo tanto **a** como **b** entre el máximo común divisor.



The ratio **a** : **b** can be simplified by dividing both **a** and **b** by the greatest common divisor.

- Use consistent formats for writing equations and answers.

Example: The format for writing equations and answers is not consistent.

- Eq: $12 \div 6$ A: 2 L
- Eq: $12 \div 6 = 2$ A: 2 L
- $12 \div 6 = 2$ (L)
- 6 liters
- 6 L per bottle
- Each bottle can hold 6 liters.


- Combine multiple forms of presentation—such as text, diagrams, and illustrations—to convey meaning more clearly.

Conclusión

Un triángulo con dos lados de igual longitud se llama triángulo isósceles.

Un triángulo con sus tres lados de igual longitud se llama triángulo equilátero.

Un triángulo que tiene sus lados con distintas longitudes se llama triángulo escaleno.



representa igualdad de longitudes.

The definitions of isosceles triangles, equilateral triangles, and scalene triangles are presented using both text and diagrams.

- Provide clear and explicit instructions.

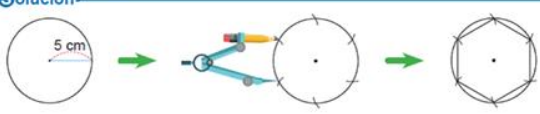
Sección 1: Circunferencia

Contenido 1: Dibujamos un hexágono regular

Problema

Dibuja con un compás un hexágono regular con lados de 5 cm.

Solución



(1) Dibuja un círculo de radio 5 cm.

(2) Haz 6 marcas en el borde del círculo con un compás abierto a 5 cm.

(3) Une con una línea cada dos puntos consecutivos.

The teaching tool to be used is clearly specified (e.g., “Draw a circle with a radius of 5 cm using a compass.”).

5. Considerations for Content Structure

- To clarify the learning sequence, standardize page layouts and adopt a consistent structure across all grade levels.
- Apply a design that highlights focus areas by adding dividing lines between sections.

«Page structure organized as: Problem, Explanation, Conclusion, Examples, Exercise»

Unidad 8: Números hasta 100

Contenido 2: Comparación de números hasta 100

Problema

a) Señala dónde se ubican 47 y 53 en la recta numérica.

b) ¿Qué número es menor, 47 o 53?

Solución

a) 47 está a 7 marcas después de 40. 53 está a 3 marcas después de 50.

b) 47 es menor que 53.

Ejemplo

Al comparar dos números en la recta numérica, siempre es mayor el que está a la derecha.

Escribe en tu cuaderno y encierra el número mayor:

a) 27 | 24 → 27 > 24 b) 36 | 63 → 63 > 36

Ejercicios

Escribe en tu cuaderno y encierra el número mayor:

a) 23 | 51 b) 40 | 70 c) 64 | 68

d) 53 | 35 e) 84 | 76

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Grade 1

Unidad 3: Suma

Sección 2: Suma vertical

Contenido 1: Suma de números de dos cifras de forma vertical (1)

Problema

María tiene 24 bananas y Ana tiene 15. ¿Cuántos bananas tienen en total?

Solución

PO: $24 + 15$

$$\begin{array}{r} \text{D} \quad \text{U} \\ 24 \\ + 15 \\ \hline 39 \end{array}$$

Alinear las cifras de acuerdo con su posición.

Suma de unidades: $4 + 5 = 9$

Suma de decenas: $2 + 1 = 3$

R: 39 bananas.

Conclusión

Esta forma de sumar se llama **suma vertical**. Se suman los números en la misma posición de derecha a izquierda.

Ejemplo

$$\begin{array}{r} 43 \\ + 15 \\ \hline 58 \end{array}$$

Suma de unidades: $3 + 5 = 8$
Suma de decenas: $4 + 0 = 4$

Ejercicios

Suma de forma vertical:

a) $\begin{array}{r} 13 \\ + 24 \\ \hline \end{array}$ b) $\begin{array}{r} 62 \\ + 35 \\ \hline \end{array}$ c) $\begin{array}{r} 54 \\ + 5 \\ \hline \end{array}$

d) $23 + 42$ e) $34 + 21$ f) $60 + 25$

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Grade 2

Unidad 11: Operaciones combinadas

Contenido 3: Multiplicaciones con sumas o restas

Problema

Hay dos hojas de calcomanías como las que se muestran a la derecha.

a) ¿Cuántas calcomanías hay en total entre las dos hojas?

b) ¿Cuántas calcomanías más hay de las rojas que de las amarillas?

Solución

a) Se puede proceder de dos formas:

$(4 + 2) \times 7 = 6 \times 7 = 42$

$4 \times 7 + 2 \times 7 = 28 + 14 = 42$

R: 42 calcomanías.

b) Se combinan restas con multiplicación:

$(4 - 2) \times 7 = 2 \times 7 = 14$

$4 \times 7 - 2 \times 7 = 28 - 14 = 14$

R: 14 calcomanías.

Conclusión

Para multiplicar con una suma o una resta se tienen las siguientes reglas:

$(+ \Delta) \times \bullet = \bullet \times (+ \Delta)$ $(- \Delta) \times \bullet = \bullet \times (- \Delta)$

A esto se le conoce como **propiedad distributiva**.

Ejemplo

Calcula usando la propiedad distributiva:

a) 104×5 : Como $104 = 100 + 4$, entonces $104 \times 5 = (100 + 4) \times 5 = 100 \times 5 + 4 \times 5 = 500 + 20 = 520$

b) 85×4 : Como $85 = 100 - 15$, entonces $85 \times 4 = (100 - 15) \times 4 = 100 \times 4 - 15 \times 4 = 400 - 60 = 340$

Ejercicios

Calcula usando la propiedad distributiva:

a) 102×4 b) 98×4 c) 99×8 d) 55×3

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Grade 3

Unidad 8: División

Sección 1: División entre un número de dos cifras.

Contenido 8: División de números de tres cifras entre números de dos cifras (3)

Problema

Dividamos $644 \div 31$ en forma vertical.

Solución

La división en forma vertical se inicia desde las decenas:

(1) Para la división $64 \div 31$ se prueba con 2:

$$\begin{array}{r} 20 \\ 31 \overline{) 644} \\ \underline{62} \\ 24 \end{array}$$

(2) Se baja 4 a la derecha de 2, y se forma 24. Como 24 es menor que 31, se agrega 0 en las unidades del cociente:

$$\begin{array}{r} 20 \\ 31 \overline{) 6440} \\ \underline{62} \\ 24 \end{array}$$

(3) Se multiplica 0×31 y se efectúa la resta:

$$\begin{array}{r} 20 \\ 31 \overline{) 6440} \\ \underline{62} \\ 24 \\ \underline{0} \\ 24 \end{array}$$

Cociente: 20. Residuo: 24.

Conclusión

Si al bajar las unidades del dividendo se forma un número menor al divisor, solo se agrega 0 para completar el cociente.

Ejemplo

Dividir $810 \div 27$. Iniciamos desde las decenas:

$$\begin{array}{r} 30 \\ 27 \overline{) 810} \\ \underline{81} \\ 0 \end{array}$$

El proceso se puede simplificar al agregar 0.

$$\begin{array}{r} 30 \\ 27 \overline{) 810} \\ \underline{81} \\ 0 \end{array}$$

El proceso se puede simplificar al agregar 0.

Ejercicios

Divide y comprueba:

a) $643 \overline{) 31}$ b) $260 \overline{) 13}$ c) $856 \overline{) 21}$ d) $780 \overline{) 26}$

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Grade 4

Unidad 9: Fracciones y números decimales

Contenido 2: Comparación de fracciones

Problema

María tiene $\frac{2}{3}$ l. de jugo y Ana tiene $\frac{3}{4}$ l. ¿Quién tiene más jugo?

Solución

Algunas fracciones equivalentes a:

$\frac{2}{3}$ son $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \dots$

$\frac{3}{4}$ son $\frac{6}{8}, \frac{9}{12}, \frac{15}{20}, \dots$

Comparando las que tienen igual denominador resulta:

$\frac{8}{12} < \frac{9}{12}$

Así que $\frac{2}{3} < \frac{3}{4}$.

R: Ana.

Conclusión

Se pueden comparar fracciones con diferentes denominadores comparando las fracciones equivalentes que tienen el mismo denominador.

Ejemplo

Escribe $>$ o $<$ según corresponda:

$\frac{5}{6} > \frac{4}{6}$

Dado que el mínimo común múltiplo de 6 y 9 es 18, las fracciones equivalentes a comparar son:

$\frac{5}{6} \times \frac{3}{3} = \frac{15}{18}$ $\frac{4}{9} \times \frac{2}{2} = \frac{8}{18}$

$\frac{15}{18} > \frac{8}{18}$

Ejercicios

Escribe $>$ o $<$ según corresponda:

a) $\frac{5}{4} > \frac{3}{2}$ b) $\frac{2}{3} > \frac{1}{4}$ c) $\frac{3}{8} > \frac{2}{5}$ d) $\frac{9}{5} > \frac{4}{3}$ e) $\frac{7}{4} > \frac{9}{8}$

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Grade 5

Unidad 11: Multiplicación de números decimales

Sección 1: Multiplicación de números decimales

Contenido 3: Multiplicación de números decimales hasta las décimas (2)

Problema

Multiplica 2.2×3.1 en forma vertical.

Solución

$$\begin{array}{r} 2.2 \\ \times 3.1 \\ \hline 22 \\ + 66 \\ \hline 6.82 \end{array}$$

Las comas decimales:

1) posición a la derecha

2) posición a la izquierda

Conclusión

Para multiplicar dos números decimales se siguen los siguientes pasos:

- Se escribe la multiplicación en forma vertical alineando los números a la derecha.
- Se multiplica como si fuesen enteros.
- Se coloca la coma decimal en el producto avanzando 2 posiciones de derecha a izquierda.

Ejemplo

a) $\begin{array}{r} 1.2 \\ \times 2.3 \\ \hline 36 \\ + 24 \\ \hline 2.76 \end{array}$ b) $\begin{array}{r} 1.5 \\ \times 3.2 \\ \hline 30 \\ + 45 \\ \hline 4.80 \end{array}$

R: 3.01 R: 4.8

Ejercicios

1. Multiplica:

a) 2.4×1.2 b) 1.3×9.2 c) 1.6×4.5

d) 4.2×1.3 e) 2.8×2.4 f) 3.5×1.8

2. Escribe el PD y responde: Si 1 galón tiene 3.8 litros, ¿cuántos litros son 2.5 galones?

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Grade 6

The learning sequence becomes clear, making it easier for students to understand what to expect in the lesson.

Even when the teacher changes, students can continue learning within a consistent instructional flow.

- Highlight important prior knowledge using speech bubbles or boxed text to support understanding.

c) $22 \div 3$
 $22 \div 3 = 7$ residuo 1

d) $93 \overline{)4}$
 Se efectúa la división de forma vertical:

$$\begin{array}{r} 93 \overline{)4} \\ - 8 \quad 2 \quad 3 \\ \hline 1 \quad 3 \\ - 1 \quad 2 \\ \hline 1 \end{array}$$

Cociente: 23
Residuo: 1

En la división recuerda los pasos:
 1. Dividir (probar)
 2. Multiplicar
 3. Restar
 4. Bajar

The method for division (previously learned) is shown in a speech bubble.

- Present information in small, manageable steps to reduce students' cognitive load.
- ✓ Show procedures step by step.

Contenido 2: Construcción de círculos

Problema
 Dibuja un círculo con radio de longitud 4 cm, siguiendo las instrucciones:
 (1) Marca el centro y con una regla ubica otro punto a una distancia de 4 cm del centro.
 (2) Abre el compás según la longitud del radio.
 (3) Coloca la aguja en el centro.
 (4) Gira el compás cuidando que la aguja no se mueva.

Solución

(1)

(2)

(3)

(4)

The process of drawing a circle with a compass is divided into four steps, each shown with text and illustrations.

- ✓ Limit the amount of new content introduced at one time.

Previous Lesson

Consider how to solve a two-digit \div one-digit division ($42 \div 3$).

Sección 1: Cálculo de divisiones

Contenido 3: Cálculo de divisiones (3)

Problema
 Hay 42 hojas y se reparten equitativamente a 3 estudiantes. ¿Cuántas tendrá cada uno?

Solución
 PO: $42 \div 3$
 Descomponiendo:
 $3 \times 10 = 30$
 $3 \times 20 = 60$ ("mayor que" 42) y $42 - 30 = 12$

Representando:

Así que:
 $30 \div 3 = 10$
 $12 \div 3 = 4$
 Juntos dan 14

Por tanto, $42 \div 3 = 14$.
 R: 14 hojas.

Ejemplo

$96 \div 4 = 24$
 $80 \div 8 = 10$
 $80 \div 4 = 20$
 $16 \div 4 = 4$
 Juntos dan 24

$4 \times 10 = 40$
 $4 \times 20 = 80$
 $4 \times 30 = 120$ ("mayor que" 96) y $96 - 80 = 16$

Ejercicios

1. Divide:
 a) $36 \div 2$ b) $72 \div 3$ c) $56 \div 4$ d) $91 \div 7$

2. Escribe el PO y responde: Hay 48 caramelos y se reparten equitativamente en 3 bolsos. ¿Cuántos tendrá cada uno?

Current Lesson

Learn the written calculation method for a two-digit \div one-digit division ($42 \div 3$).

Unidad 10

Sección 2: División en forma vertical

Contenido 1: División en forma vertical (1)

Problema
 Dividamos $42 \div 3$ en forma vertical.

Solución
 La división en forma vertical se escribe y se resuelve así:

1. Toma 4 (cifra de las decenas) y divide $4 \div 3$.

$$\begin{array}{r} 1 \overline{)4} \\ - 3 \\ \hline 1 \end{array}$$

2. Multiplica 1×3 y escribe dicho producto debajo de 4.

$$\begin{array}{r} 1 \overline{)4} \\ - 3 \\ \hline 1 \end{array}$$

3. Resta $4 - 3$.

$$\begin{array}{r} 1 \overline{)4} \\ - 3 \\ \hline 1 \end{array}$$

4. Baja 2 (cifra de las unidades) y divide $12 \div 3$.

$$\begin{array}{r} 14 \overline{)42} \\ - 3 \quad 1 \quad 4 \\ \hline 1 \quad 2 \end{array}$$

5. Multiplica 4×3 y escribe dicho producto debajo de 12.

$$\begin{array}{r} 14 \overline{)42} \\ - 3 \quad 1 \quad 4 \\ \hline 1 \quad 2 \end{array}$$

6. Resta $12 - 12$.

$$\begin{array}{r} 14 \overline{)42} \\ - 3 \quad 1 \quad 4 \\ \hline 1 \quad 2 \\ - 1 \quad 2 \\ \hline 0 \end{array}$$

Significado:

$$\begin{array}{r} 14 \overline{)42} \\ - 3 \quad 1 \quad 4 \\ \hline 1 \quad 2 \\ - 1 \quad 2 \\ \hline 0 \end{array}$$

$10 \times 3 = 30$
 $4 \times 3 = 12$
 $30 + 12 = 42$

Using the same equation as in the previous lesson helps students focus on the new learning content: "the written calculation method."

【Notes】

- The English translations of textbook content in this material are supplementary additions by the author and are not official translations.
- The cited textbook was developed with technical support from JICA's "Project for Mathematics Friendly Learning in Primary Education of Nicaragua (NICAMATE2)" and published by the Ministry of Education of Nicaragua.

【Cited Textbook (Official Local Title)】

- Ministerio de Educación (MINED) de la República de Nicaragua.
Libro de Texto Matemática, 1er grado. Primera edición, 2024.
- Ministerio de Educación (MINED) de la República de Nicaragua.
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