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- * Review
- ___ Give a quiz/test

Grade 7, Part 1

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Grade 7, Part 2

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Answer Keys for Assessment & Practice Book 7.2

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Welcome to JUMP Math and Your Grade 7 Teacher Resource

JUMP Math is …

JUMP Math is an award-winning charitable organization dedicated to helping people lead more fulfilled lives. JUMP Math's research-informed materials and professional development replace math anxiety with an understanding and a love of math in students and educators.

JUMP Math Features

The following are the features of JUMP Math:

- Confidence building
- Structured inquiry
- Structured variation
- Guided practice
- Scaffolded instruction
- Continuous assessment
- Differentiation
- Mental math

Confidence building

JUMP Math recognizes that math anxiety is a significant barrier to learning for many students. The research in cognition that shows the brain can be altered by education also shows that the brain can't register the effects of education if it is not attentive. However, a student's brain can't be truly attentive unless the student is confident and excited and believes that there is a point in being engaged in the work. The JUMP Math approach reduces math anxiety by building on success in small steps. When students who are struggling become convinced that they cannot keep up with the rest of the class, their brains begin to work less efficiently, as they are never attentive enough to fully consolidate new skills or develop new neural pathways. That is why it is so important to give students the skills they need to take part in lessons and to give them opportunities to show off by answering questions in front of their classmates.

Structured inquiry

Structured inquiry is a balanced instructional approach that incorporates explicit instruction combined with guided and independent practice. In JUMP Math lessons, students are expected to derive concepts and solve problems themselves, but the teacher provides enough rigorous guidance to make sure this happens with all students and not just the advanced few. Students are led to deep conceptual understanding and computational fluency.

Structured variation

Variation theory of learning teaches that students understand concepts better if they concentrate on the critical aspects of these concepts and that these critical concepts can be brought out by holding some things constant while other things vary. JUMP Math materials structure the variation by presenting exercise progressions that begin by keeping all but one parameter constant, drawing students' attention to the changing parameter. For example, when teaching subtracting 10 from a three-digit number you would vary only the tens digit in the minuend, such as in $222 - 10$, $252 - 10$, and $202 - 10$. Variation could continue by subtracting 100 or 1 from the same numbers to contrast these with subtracting 10 or by varying other digits in the minuend.

Guided practice

In guided practice, teachers offer students purposeful practice that immediately follows the teaching of a skill or scaffolded step of a concept. This guided practice allows the teacher to continuously assess and confirm students' understanding and mastery.

Scaffolded instruction

Scaffolded instruction is an effective instructional practice where new ideas and skills are reviewed and introduced in smaller incremental steps directly linked to and built upon earlier learning. Each lesson offers a series of carefully considered exercises and explorations in which each new concept follows from the last. Students are more likely to make discoveries if the progression of ideas makes sense to them and does not overwhelm them.

Continuous assessment

The progression of learning contained in each JUMP Math lesson enables active and ongoing assessment, often referred to as "continuous assessment." Through observation, questioning, and interaction with students as they work, teachers are readily able to check for understanding, identify and correct misunderstandings, and differentiate instruction with timely interventions. Continuous assessment often provides a more accurate and complete picture of a student's ability and has a positive impact on learning.

Differentiation

JUMP Math recognizes that classrooms are diverse in their makeup and needs, and that students range in their levels of focus, concentration, engagement, processing speed, and readiness to explore and demonstrate learning. In order to support this diversity, JUMP Math lessons and supporting resources provide multiple approaches to exploring, practising, and assessing skills. Teachers can differentiate the development of skills without differentiating the outcomes of their students by teaching lessons in short instructional pieces and assigning scaffolded exercises, hands-on activities, and extension questions. In JUMP Math, mastery is the goal of each lesson and all students are supported to reach that goal.

Mental math

Mental math is a mathematical framework that includes number sense, computational fluency, and the application of number concepts through purposeful and varied practice, not just rote memorization. In JUMP Math, mental math is explored through regular practice.

JUMP Math Classroom Materials

JUMP Math has developed a variety of materials to help you teach math. In this section, we will describe the following components and features of the JUMP Math classroom materials:

- Teacher Resource Table of contents
- Mental math
- Unit introductions
- Lesson plans
- Digital lesson slides
- Blackline Masters (BLMs)
- Assessment tools
- Problem-solving lessons
- Assessment & Practice Books
- Answer keys
- Curriculum correlations
- Confidence Building Units

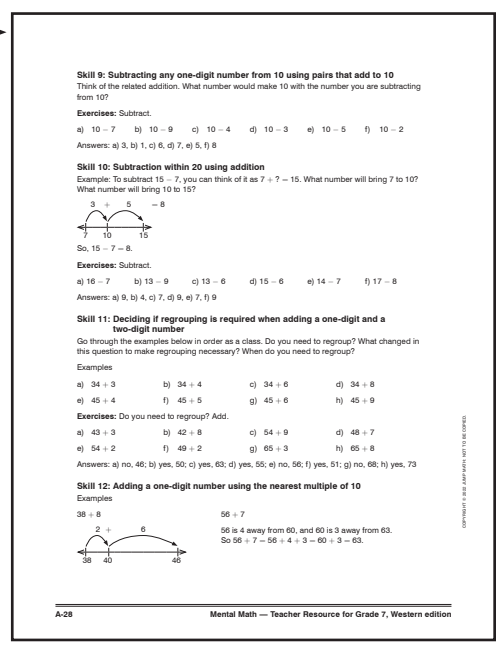
JUMP Math materials can be ordered at www.jumpmath.org. You can also visit our online Resource Centre, which offers a variety of free resources. For more information about, or support in using your new resource, please contact your regional Manager of Outreach & Teacher Support, whose contact information can also be found on our website.

Teacher Resource Table of Contents

The table of contents for the Teacher Resource contains information on where to find each component, as well as details on the provincial curriculum requirement for each lesson. The lessons are flagged as required, recommended, or optional for each province. Lessons labelled as required are necessary to cover the curriculum. Lessons labelled as recommended are either essential review or contain extra material that is used in future lessons. Lessons labelled as optional cover material that is not required by the curriculum or in future lessons. Review lessons are marked with an asterisk (*) in the table of contents. If the significant majority of your students have a strong foundation in the material covered in a review lesson, we recommend you use the material with individuals or small groups of students who need the review. Otherwise, you should teach them to the whole class.

Mental Math

Mental math is a mathematical framework that includes number sense, computational fluency, and the application of number concepts through purposeful and varied practice, not just rote memorization. A progression of essential mental math concepts and skills is outlined in this section (see p. A-23). The teaching of the skills has been integrated into lesson plans throughout the beginning of the year in the form of mental math minutes.



Skill 9: Subtracting any one-digit number from 10 using pairs that add to 10

Think of the related addition. What number would make 10 with the number you are subtracting from 10?

Exercises: Subtract.

a) $10 - 7$ b) $10 - 9$ c) $10 - 4$ d) $10 - 3$ e) $10 - 5$ f) $10 - 2$

Answers: a) 3, b) 1, c) 6, d) 7, e) 5, f) 8

Skill 10: Subtraction within 20 using addition

Example: To subtract $15 - 7$, you can think of it as $7 + ? = 15$. What number will bring 7 to 10? What number will bring 10 to 15?

3 + 5 = 8

7 10 15

So, $15 - 7 = 8$.

Exercises: Subtract.

a) $16 - 7$ b) $13 - 9$ c) $13 - 6$ d) $15 - 6$ e) $14 - 7$ f) $17 - 8$

Answers: a) 9, b) 4, c) 7, d) 9, e) 7, f) 9

Skill 11: Deciding if regrouping is required when adding a one-digit and a two-digit number

Go through the examples below in order as a class. Do you need to regroup? What changed in this question to make regrouping necessary? When do you need to regroup?

Examples

a) $34 + 3$ b) $34 + 4$ c) $34 + 6$ d) $34 + 8$

e) $45 + 4$ f) $45 + 5$ g) $45 + 6$ h) $45 + 9$

Exercises: Do you need to regroup? Add.

a) $43 + 3$ b) $42 + 8$ c) $54 + 9$ d) $48 + 7$

e) $54 + 2$ f) $49 + 2$ g) $65 + 3$ h) $65 + 8$

Answers: a) no, 46; b) yes, 50; c) yes, 63; d) yes, 55; e) no, 56; f) yes, 51; g) no, 68; h) yes, 73

Skill 12: Adding a one-digit number using the nearest multiple of 10

Examples

$38 + 8$

2 + 6 = 8

38 40 46

$56 + 7$

56 is 4 away from 60, and 60 is 3 away from 63.
So $56 + 7 = 56 + 4 + 3 = 60 + 3 = 63$.

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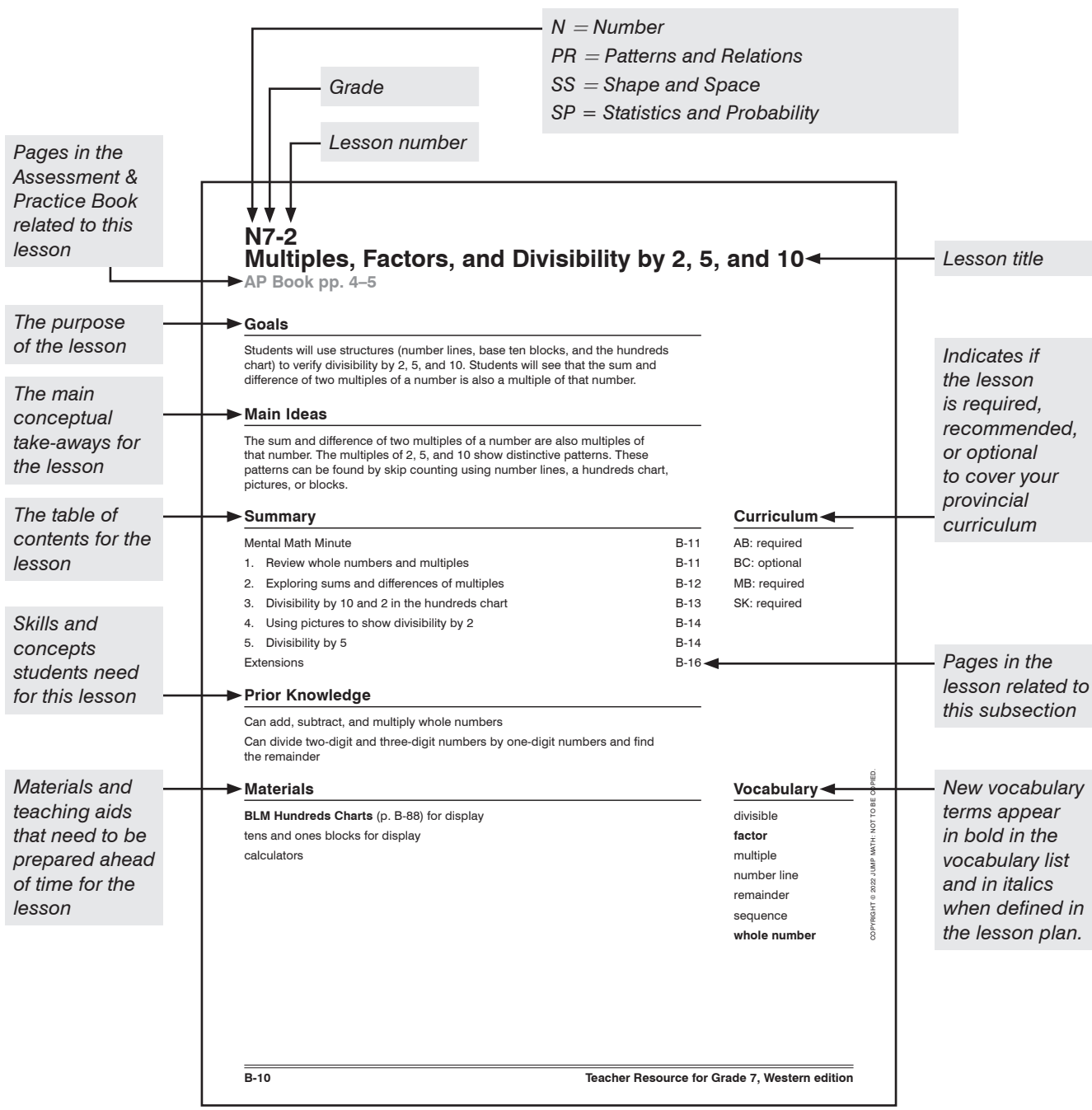
Unit Introductions

Each unit begins with an introduction that is designed to serve as a planning support. The unit introductions include some or all of the following:

- Overview of the topics covered in the unit
- Specifications on meeting your curriculum
- Rationale for the mental math minutes used in the unit
- Correlation between the lessons and the quizzes and tests
- Notes on materials and vocabulary used in the lessons

Lesson Plans

The JUMP Math lesson plans guide teachers through a progression of skill and concept development, tasks to demonstrate and model, and varied opportunities to guide student exploration, practice, and learning. The lesson plans provide clear explanations and explicit guidance on how to introduce one concept at a time, explore concepts and make connections in a variety of ways, assess students quickly, enhance learning with interactive activities, and challenge students with bonus questions. Problem-solving skills are developed progressively throughout the lesson with a series of probing questions and enriched discussions. The lesson plans are designed to be used in conjunction with Blackline Masters, digital lesson slides, and corresponding pages in the Assessment & Practice Books.

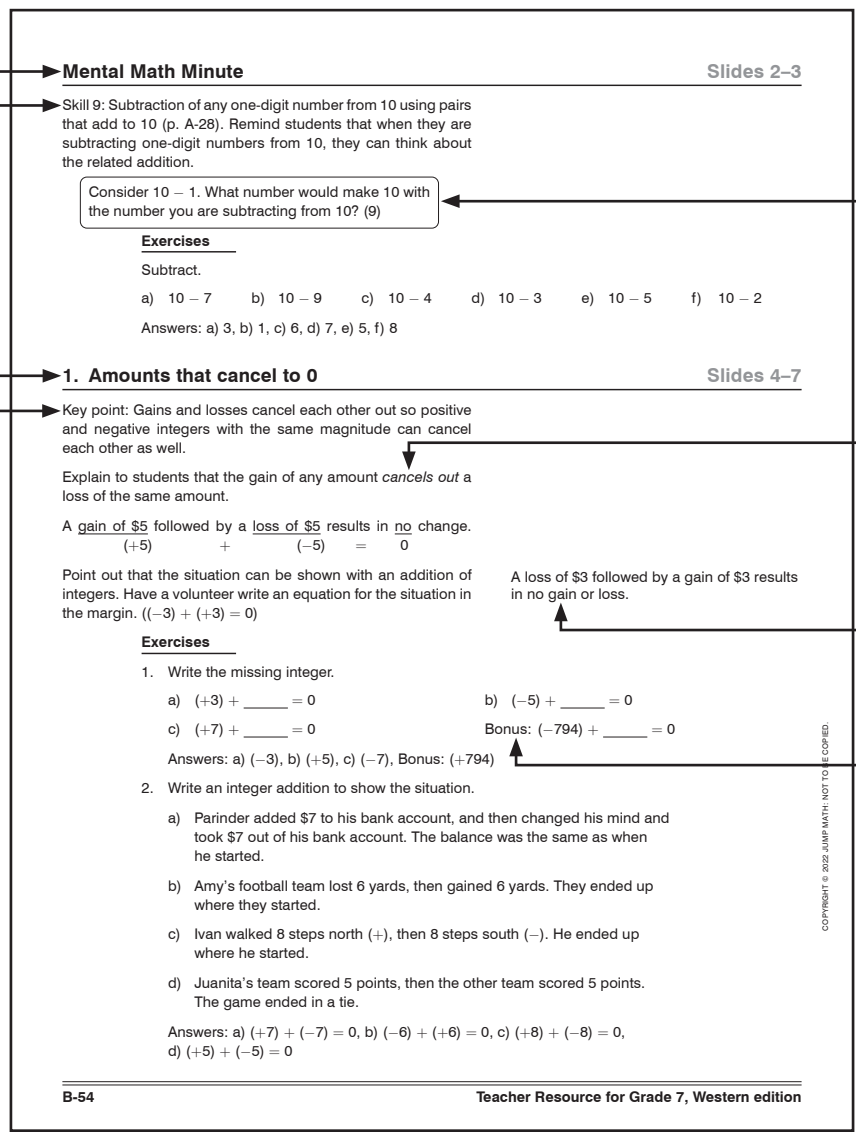


Suggestions for practising mental math

Reference to the progression of mental math skills listed in the Introduction to the Teacher Resource

The main topic of the subsection

The main conceptual take-aways for each subsections are stated explicitly.



Mental Math Minute Slides 2–3

Skill 9: Subtraction of any one-digit number from 10 using pairs that add to 10 (p. A-28). Remind students that when they are subtracting one-digit numbers from 10, they can think about the related addition.

Consider $10 - 1$. What number would make 10 with the number you are subtracting from 10? (9)

Exercises

Subtract.

a) $10 - 7$ b) $10 - 9$ c) $10 - 4$ d) $10 - 3$ e) $10 - 5$ f) $10 - 2$

Answers: a) 3, b) 1, c) 6, d) 7, e) 5, f) 8

1. Amounts that cancel to 0 Slides 4–7

Key point: Gains and losses cancel each other out so positive and negative integers with the same magnitude can cancel each other as well.

Explain to students that the gain of any amount *cancels out* a loss of the same amount.

A gain of \$5 $(+5)$ followed by a loss of \$5 (-5) results in no change. $(+5) + (-5) = 0$

Point out that the situation can be shown with an addition of integers. Have a volunteer write an equation for the situation in the margin. $((-3) + (+3) = 0)$

A loss of \$3 followed by a gain of \$3 results in no gain or loss.

Exercises

1. Write the missing integer.

   a) $(+3) + \_\_\_\_\_ = 0$ b) $(-5) + \_\_\_\_\_ = 0$

   c) $(+7) + \_\_\_\_\_ = 0$ Bonus: $(-794) + \_\_\_\_\_ = 0$

   Answers: a) (-3), b) $(+5)$, c) (-7), Bonus: $(+794)$

2. Write an integer addition to show the situation.

   a) Parinder added \$7 to his bank account, and then changed his mind and took \$7 out of his bank account. The balance was the same as when he started.

   b) Amy's football team lost 6 yards, then gained 6 yards. They ended up where they started.

   c) Ivan walked 8 steps north $(+)$, then 8 steps south $(-)$. He ended up where he started.

   d) Juanita's team scored 5 points, then the other team scored 5 points. The game ended in a tie.

   Answers: a) $(+7) + (-7) = 0$, b) $(-6) + (+6) = 0$, c) $(+8) + (-8) = 0$, d) $(+5) + (-5) = 0$

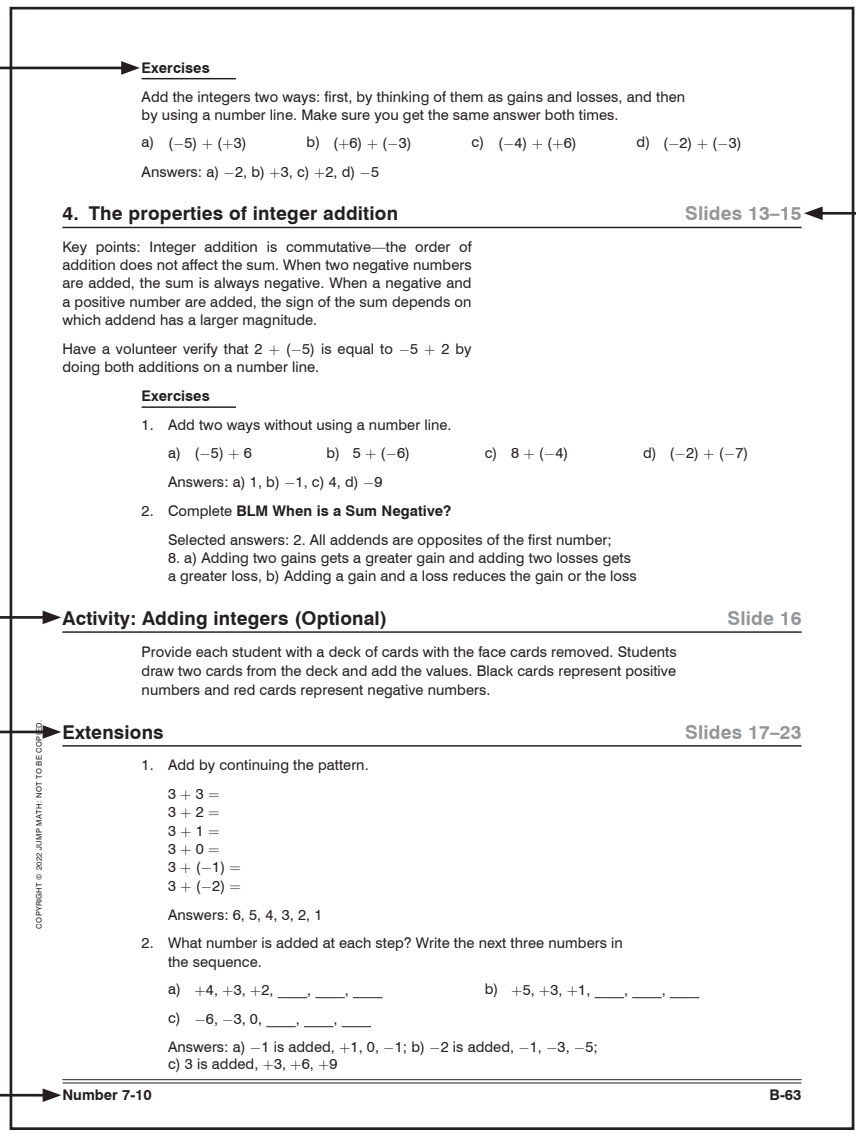
B-54 Teacher Resource for Grade 7, Western edition

Specific prompts provide suggested wording for teachers who need more help. Sample answers are provided in brackets.

New vocabulary is italicized when introduced.

Suggestions for what should go on the board appear in the margin

Bonus questions are often provided.



Exercises

Add the integers two ways: first, by thinking of them as gains and losses, and then by using a number line. Make sure you get the same answer both times.

a) $(-5) + (+3)$ b) $(+6) + (-3)$ c) $(-4) + (+6)$ d) $(-2) + (-3)$

Answers: a) -2, b) $+3$, c) $+2$, d) -5

4. The properties of integer addition Slides 13–15

Key points: Integer addition is commutative—the order of addition does not affect the sum. When two negative numbers are added, the sum is always negative. When a negative and a positive number are added, the sign of the sum depends on which addend has a larger magnitude.

Have a volunteer verify that $2 + (-5)$ is equal to $-5 + 2$ by doing both additions on a number line.

Exercises

1. Add two ways without using a number line.

   a) $(-5) + 6$ b) $5 + (-6)$ c) $8 + (-4)$ d) $(-2) + (-7)$

   Answers: a) 1, b) -1, c) 4, d) -9

2. Complete **BLM When is a Sum Negative?**

   Selected answers: 2. All addends are opposites of the first number;
   8. a) Adding two gains gets a greater gain and adding two losses gets a greater loss, b) Adding a gain and a loss reduces the gain or the loss

Activity: Adding integers (Optional) Slide 16

Provide each student with a deck of cards with the face cards removed. Students draw two cards from the deck and add the values. Black cards represent positive numbers and red cards represent negative numbers.

Extensions Slides 17–23

1. Add by continuing the pattern.

   $3 + 3 =$
   $3 + 2 =$
   $3 + 1 =$
   $3 + 0 =$
   $3 + (-1) =$
   $3 + (-2) =$

   Answers: 6, 5, 4, 3, 2, 1

2. What number is added at each step? Write the next three numbers in the sequence.

   a) $+4, +3, +2,$ ___, ___, ___ b) $+5, +3, +1,$ ___, ___, ___

   c) $-6, -3, 0,$ ___, ___, ___

   Answers: a) -1 is added, $+1$, 0, -1; b) -2 is added, -1, -3, -5;
   c) 3 is added, $+3$, $+6$, $+9$

Number 7-10 **B-63**

Exercises for individual practice (with answers) are highlighted.

Slides from the Digital Lesson Slides connected to the subsection

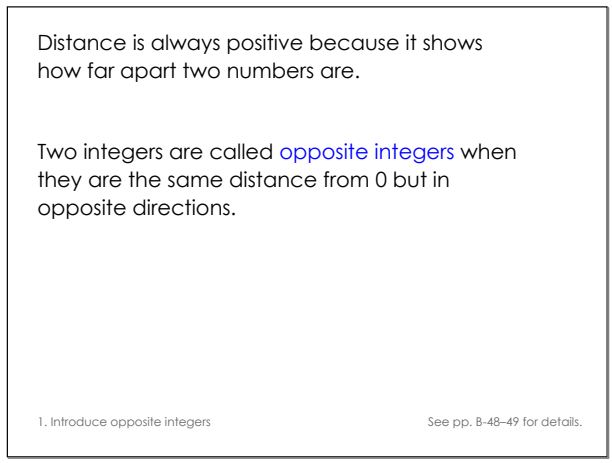
Activities in the lesson plan are labelled as either essential or optional.

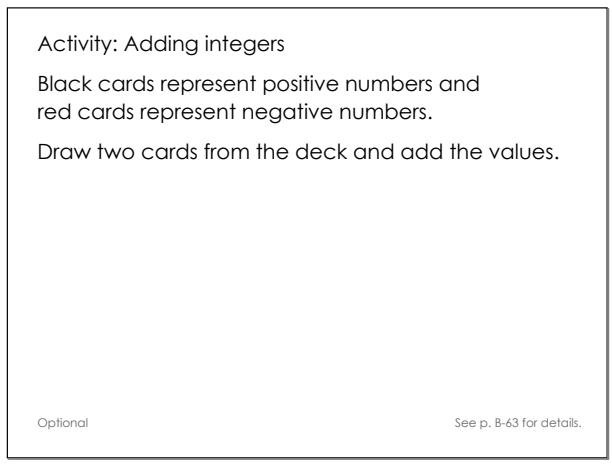
Extension questions appear at the end of the lesson plan.

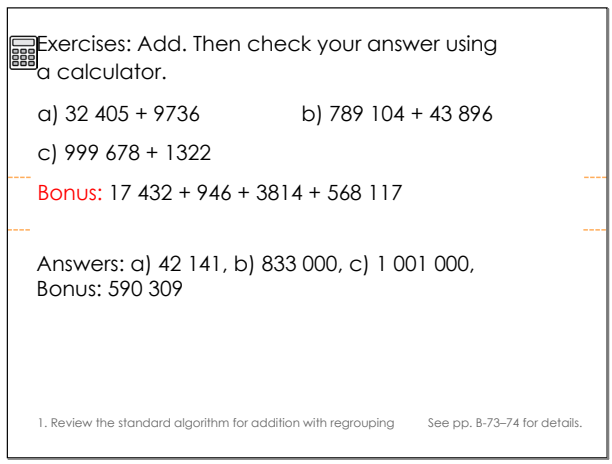
Strand, grade, and lesson number

Digital Lesson Slides

Digital lesson slides guide teachers to follow the progression of skill development within a lesson. They are not intended as stand-alone tools or lessons, but are to be used in tandem with the lesson plans. The slides include diagrams, sample problems, practice exercises, bonus questions, and extensions.



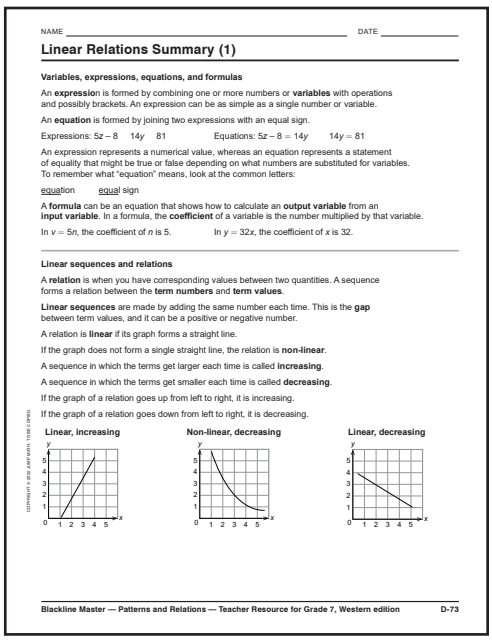




Blackline Masters (BLMs)

Blackline Masters (BLMs) are reproducible pages that are lesson-specific or used repeatedly throughout the unit and are designed to supplement instruction in the lesson. BLMs can be used to, for example, provide practice that is integral to the lesson, provide additional practice for students who require it, or serve as templates or manipulatives that can be used during the lesson.

Additionally, Summary BLMs provide a summary of important formulas, procedures, or definitions specific to a unit. Cumulative Review BLMs contain problems that review the material learned to date. Unit Problem BLMs present challenging real-world problems that combine the material of a whole unit and can be done either in stages throughout the unit or after the whole unit is taught.



NAME _____ DATE _____

Linear Relations Summary (1)

Variables, expressions, equations, and formulas

An **expressio**n is formed by combining one or more numbers or **variables** with operations and possibly brackets. An expression can be as simple as a single number or variable.

An **equation** is formed by joining two expressions with an equal sign.

Expressions: $5z - 8$ $14y$ 81 Equations: $5z - 8 = 14y$ $14y = 81$

An expression represents a numerical value, whereas an equation represents a statement of equality that might be true or false depending on what numbers are substituted for variables. To remember what "equation" means, look at the common letters:

equation equal sign

A **formula** can be an equation that shows how to calculate an **output variable** from an **input variable**. In a formula, the **coefficient** of a variable is the number multiplied by that variable.

In $v = 5n$, the coefficient of n is 5. In $y = 32x$, the coefficient of x is 32.

Linear sequences and relations

A **relation** is when you have corresponding values between two quantities. A sequence forms a relation between the **term numbers** and **term values**.

Linear sequences are made by adding the same number each time. This is the **gap** between term values, and it can be a positive or negative number.

A relation is **linear** if its graph forms a straight line.

If the graph does not form a single straight line, the relation is **non-linear**.

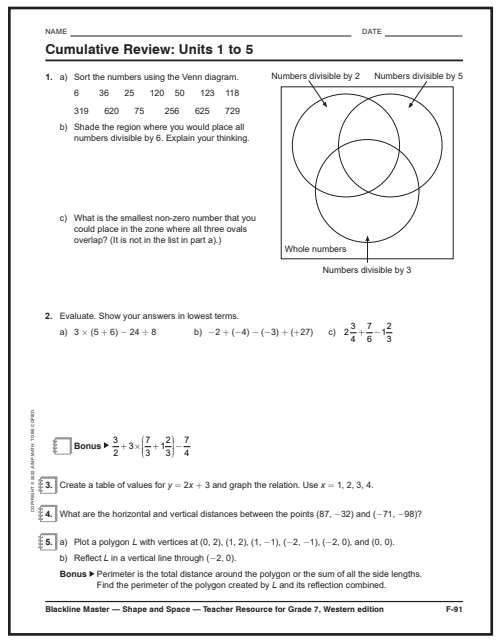
A sequence in which the terms get larger each time is called **increasing**.

A sequence in which the terms get smaller each time is called **decreasing**.

If the graph of a relation goes up from left to right, it is increasing.

If the graph of a relation goes down from left to right, it is decreasing.

Linear, increasing **Non-linear, decreasing** **Linear, decreasing**



NAME _____ DATE _____

Cumulative Review: Units 1 to 5

1. a) Sort the numbers using the Venn diagram.

6 36 25 120 50 123 118

319 620 75 256 625 729

Numbers divisible by 2 Numbers divisible by 5

Whole numbers

Numbers divisible by 3

b) Shade the region where you would place all numbers divisible by 6. Explain your thinking.

c) What is the smallest non-zero number that you could place in the zone where all three ovals overlap? (It is not in the list in part a).)

2. Evaluate. Show your answers in lowest terms.

a) $3 \times (5 + 6) - 24 \div 8$ b) $-2 + (-4) - (-3) + (+27)$ c) $2\frac{3}{4} \div \frac{7}{6} - 1\frac{2}{3}$

Bonus ▶ $\frac{3}{2} + 3 \times \left(\frac{7}{3} + 1\frac{2}{3}\right) - \frac{7}{4}$

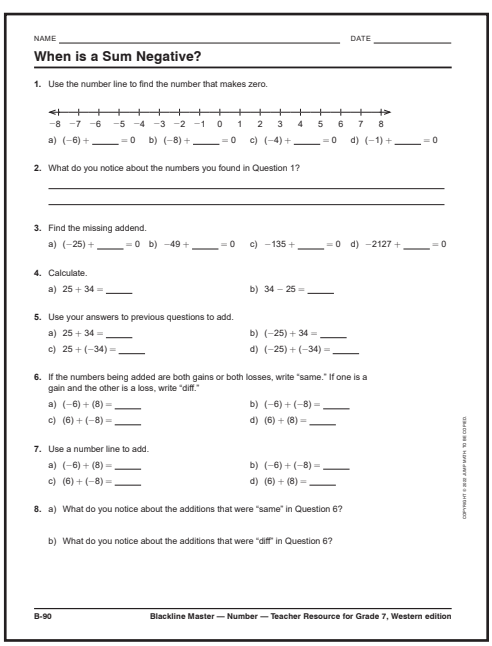
3. Create a table of values for $y = 2x + 3$ and graph the relation. Use $x = 1, 2, 3, 4$.

4. What are the horizontal and vertical distances between the points $(87, -32)$ and $(-71, -98)$?

5. a) Plot a polygon L with vertices at $(0, 2)$, $(1, 2)$, $(1, -1)$, $(-2, -1)$, $(-2, 0)$, and $(0, 0)$.

b) Reflect L in a vertical line through $(-2, 0)$.

Bonus ▶ Perimeter is the total distance around the polygon or the sum of all the side lengths. Find the perimeter of the polygon created by L and its reflection combined.



NAME _____ DATE _____

When is a Sum Negative?

1. Use the number line to find the number that makes zero.

-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8

a) $(-6) + \_\_\_\_ = 0$ b) $(-8) + \_\_\_\_ = 0$ c) $(-4) + \_\_\_\_ = 0$ d) $(-1) + \_\_\_\_ = 0$

2. What do you notice about the numbers you found in Question 1?

3. Find the missing addend.

a) $(-25) + \_\_\_\_ = 0$ b) $-49 + \_\_\_\_ = 0$ c) $-135 + \_\_\_\_ = 0$ d) $-2127 + \_\_\_\_ = 0$

4. Calculate.

a) $25 + 34 = \_\_\_\_$ b) $34 - 25 = \_\_\_\_$

5. Use your answers to previous questions to add.

a) $25 + 34 = \_\_\_\_$ b) $(-25) + 34 = \_\_\_\_$

c) $25 + (-34) = \_\_\_\_$ d) $(-25) + (-34) = \_\_\_\_$

6. If the numbers being added are both gains or both losses, write "same." If one is a gain and the other is a loss, write "diff."

a) $(-6) + (8) = \_\_\_\_$ b) $(-6) + (-8) = \_\_\_\_$

c) $(6) + (-8) = \_\_\_\_$ d) $(6) + (8) = \_\_\_\_$

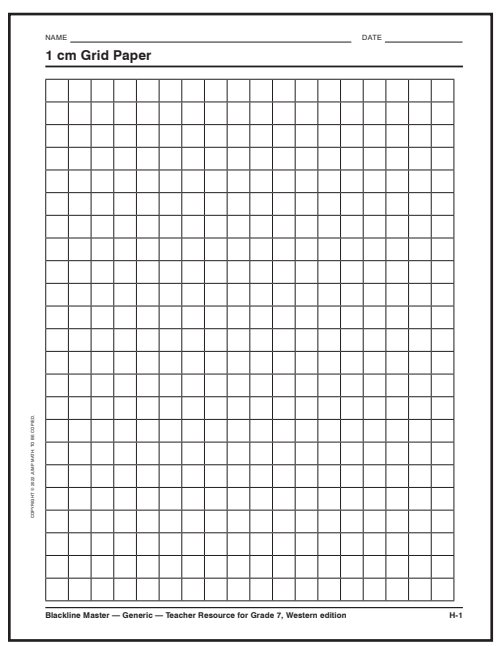
7. Use a number line to add.

a) $(-6) + (8) = \_\_\_\_$ b) $(-6) + (-8) = \_\_\_\_$

c) $(6) + (-8) = \_\_\_\_$ d) $(6) + (8) = \_\_\_\_$

8. a) What do you notice about the additions that were "same" in Question 6?

b) What do you notice about the additions that were "diff" in Question 6?



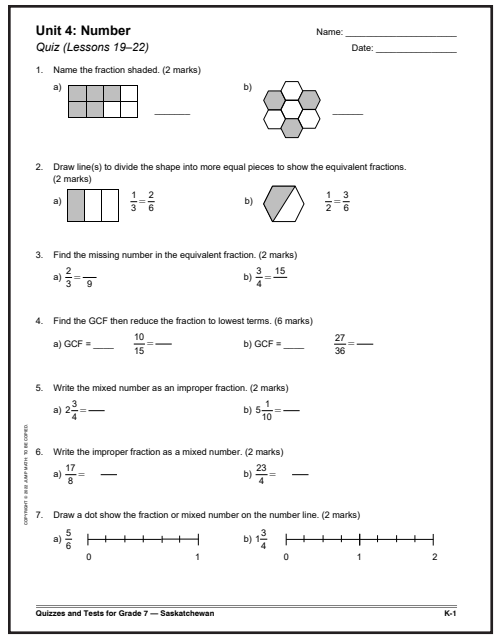
NAME _____ DATE _____

1 cm Grid Paper

Assessment Tools

JUMP Math provides modifiable quizzes and tests for summative assessment. We provide a quiz for, on average, every four lessons and a test covering the material of two to three quizzes, with one or two tests per unit. Students should need no more than 15 minutes to complete a quiz and no more than 45 minutes to complete a test. Quizzes cover material both from lessons that are required to cover the curriculum and lessons labelled as recommended, while tests only cover material from lessons that are required to cover the curriculum.

The quizzes and tests are available in print and in a modifiable format online at www.jumpmath.org.



Unit 4: Number Name: _____

Quiz (Lessons 19–22) Date: _____

1. Name the fraction shaded. (2 marks)

a) _____ b) _____

2. Draw line(s) to divide the shape into more equal pieces to show the equivalent fractions. (2 marks)

a) $\frac{1}{3} = \frac{2}{6}$ b) $\frac{1}{2} = \frac{3}{6}$

3. Find the missing number in the equivalent fraction. (2 marks)

a) $\frac{2}{3} = \frac{\quad}{9}$ b) $\frac{3}{4} = \frac{15}{\quad}$

4. Find the GCF then reduce the fraction to lowest terms. (6 marks)

a) GCF = ____ $\frac{10}{15} = \frac{\quad}{\quad}$ b) GCF = ____ $\frac{27}{36} = \frac{\quad}{\quad}$

5. Write the mixed number as an improper fraction. (2 marks)

a) $2\frac{3}{4} = \frac{\quad}{\quad}$ b) $5\frac{1}{10} = \frac{\quad}{\quad}$

6. Write the improper fraction as a mixed number. (2 marks)

a) $\frac{17}{8} = \frac{\quad}{\quad}$ b) $\frac{23}{4} = \frac{\quad}{\quad}$

7. Draw a dot show the fraction or mixed number on the number line. (2 marks)

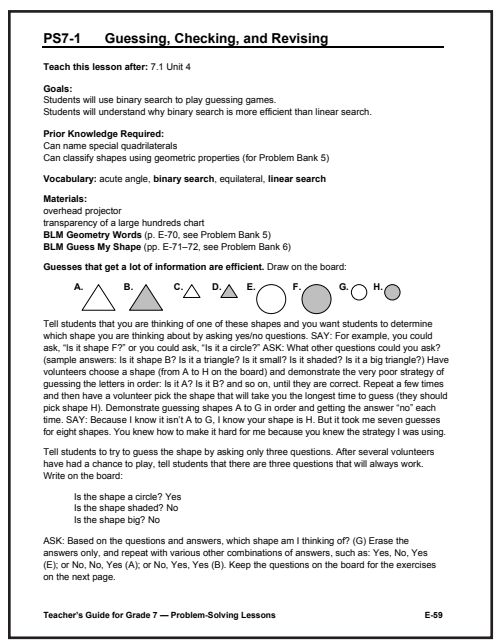
a) $\frac{5}{6}$ 0 1 b) $1\frac{3}{4}$ 0 1 2

Quizzes and Tests for Grade 7 — Saskatchewan K-1

Problem-Solving Lessons

Problem-Solving lessons are a set of 10 lessons that can be taught at any point when the prior knowledge requirements are satisfied. The lessons demonstrate various problem-solving techniques and focus on specific strategies rather than meeting curriculum outcomes.

A detailed description of how to use the lessons is included in the introduction to the set of problem-solving lessons.



PS7-1 Guessing, Checking, and Revising

Teach this lesson after: 7.1 Unit 4

Goals:
Students will use binary search to play guessing games.
Students will understand why binary search is more efficient than linear search.

Prior Knowledge Required:
Can name special quadrilaterals
Can classify shapes using geometric properties (for Problem Bank 5)

Vocabulary: acute angle, **binary search**, equilateral, **linear search**

Materials:
overhead projector
transparency of a large hundreds chart
BLM Geometry Words (p. E-70, see Problem Bank 5)
BLM Guess My Shape (pp. E-71–72, see Problem Bank 6)

Guesses that get a lot of information are efficient. Draw on the board:

A. B. C. D. E. F. G. H.

Tell students that you are thinking of one of these shapes and you want students to determine which shape you are thinking about by asking yes/no questions. SAY: For example, you could ask, "Is it shape F?" or you could ask, "Is it a circle?" ASK: What other questions could you ask? (sample answers: Is it shape B? Is it a triangle? Is it small? Is it shaded? Is it a big triangle?) Have volunteers choose a shape (from A to H on the board) and demonstrate the very poor strategy of guessing the letters in order: Is it A? Is it B? and so on, until they are correct. Repeat a few times and then have a volunteer pick the shape that will take you the longest time to guess (they should pick shape H). Demonstrate guessing shapes A to G in order and getting the answer "no" each time. SAY: Because I know it isn't A to G, I know your shape is H. But it took me seven guesses for eight shapes. You knew how to make it hard for me because you knew the strategy I was using.

Tell students to try to guess the shape by asking only three questions. After several volunteers have had a chance to play, tell students that there are three questions that will always work. Write on the board:

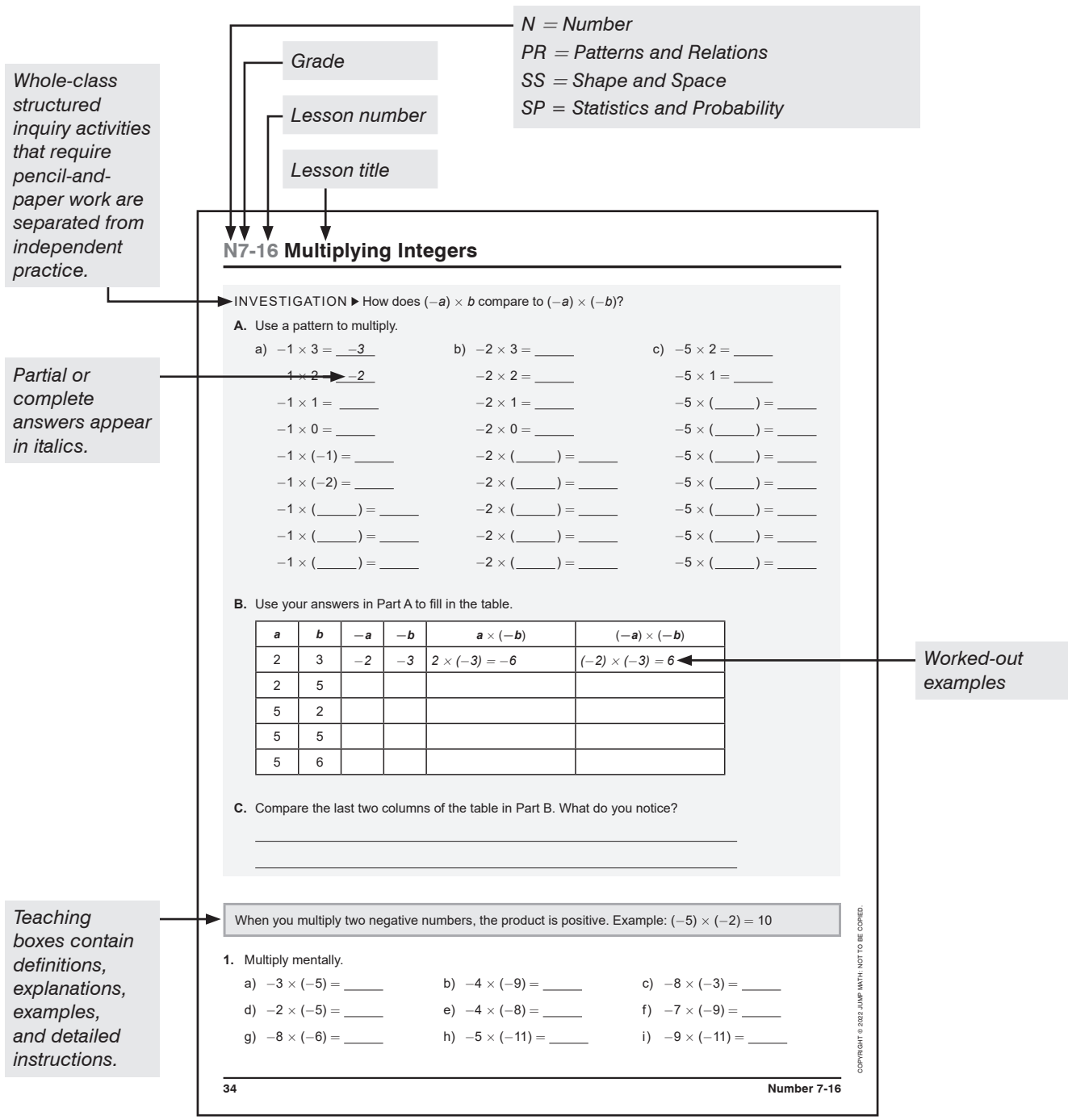
Is the shape a circle? Yes
Is the shape shaded? No
Is the shape big? No

ASK: Based on the questions and answers, which shape am I thinking of? (G) Erase the answers only, and repeat with various other combinations of answers, such as: Yes, No, Yes (E); or No, No, Yes (A); or No, Yes, Yes (B). Keep the questions on the board for the exercises on the next page.

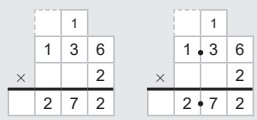
Teacher's Guide for Grade 7 — Problem-Solving Lessons E-59

Assessment & Practice Books

These consumable books dovetail seamlessly with the lesson plans. Students work directly in the books to consolidate the skills and concepts taught in the lesson, while teachers assess student understanding. Students also use notebooks for longer or less-scaffolded questions. A notebook icon beside a question prompts the use of the notebooks. Each student requires one set of Assessment & Practice Books, which includes a Part 1 and Part 2, for the school year.

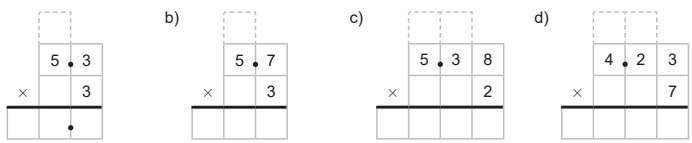


Compare multiplying 136×2 and 1.36×2 using a grid.



5. Multiply using a grid. Remember to include the decimal point. You may have to regroup.

a) b) c) d)



6. Multiply using a grid. Remember that $4 \times 2.1 = 2.1 \times 4$.

a) b)

REMINDER: Since $40 = 4 \times 10$, you can rewrite 40×2.1 to make multiplying easier:

$$\begin{aligned} 40 \times 2.1 &= (4 \times 10) \times 2.1 \\ &= 4 \times (10 \times 2.1) \\ &= 4 \times 21 \\ &= 84 \end{aligned}$$

7. Use the method above to multiply.

a) 50×7.3 b) 60×3.58 c) 70×12.13 **Bonus ▶** 20×4326.17

8. When conditions are perfect, a commercial beehive can produce as much as 4.53 kg of honey in a day. On a more typical day, it produces about 0.85 kg.

a) If there are 4 perfect days and 30 typical days in a season, approximately how much honey can one hive produce?

b) If there are 100 hives in a single apiary (a collection of beehives) and the conditions are perfect, approximately how many kilograms of honey can all the hives together produce in a season? Estimate first by rounding to the nearest whole number and then calculate.

Reminder boxes contain summaries of information taught previously.

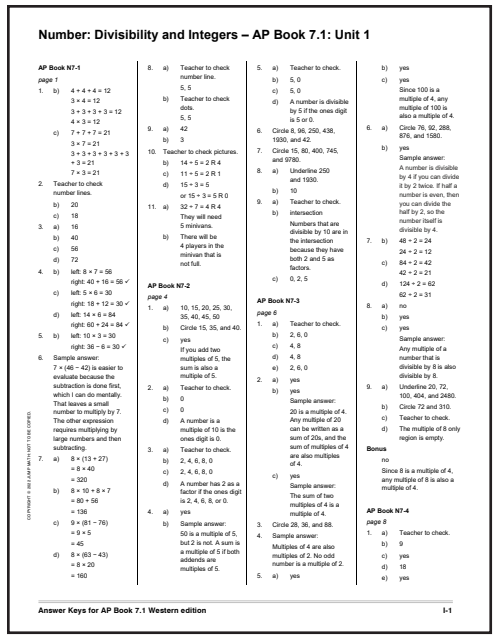
The notebook icon indicates that students must answer in a notebook.

Bonus questions are often provided

Strand, grade, and lesson number

Answer Keys

Answer keys are available for the Assessment & Practice Books.



Number: Divisibility and Integers – AP Book 7.1: Unit 1

AP Book N7-1
page 1

1. b) $4 + 4 + 4 = 12$; $3 \times 4 = 12$; $3 + 3 + 3 + 3 = 12$; $4 \times 3 = 12$
   c) $7 + 7 + 7 = 21$; $3 \times 7 = 21$; $3 + 3 + 3 + 3 + 3 + 3 + 3 = 21$; $7 \times 3 = 21$
2. Teacher to check number lines.
   b) 20
   c) 18
3. a) 16
   b) 40
   c) 56
   d) 72
4. b) left: $8 \times 7 = 56$; right: $40 + 16 = 56$ ✓
   c) left: $5 \times 6 = 30$; right: $18 + 12 = 30$ ✓
   d) left: $14 \times 6 = 84$; right: $60 + 24 = 84$ ✓
5. b) left: $10 \times 3 = 30$; right: $36 - 6 = 30$ ✓
6. Sample answer: $7 \times (46 - 42)$ is easier to evaluate because the subtraction is done first, which I can do mentally. That leaves a small number to multiply by 7. The other expression requires multiplying by large numbers and then subtracting.
7. a) $8 \times (13 + 27) = 8 \times 40 = 320$
   b) $8 \times 10 + 8 \times 7 = 80 + 56 = 136$
   c) $9 \times (81 - 76) = 9 \times 5 = 45$
   d) $8 \times (63 - 43) = 8 \times 20 = 160$
8. a) Teacher to check number line. 5, 5
   b) Teacher to check dots. 5, 5
9. a) 42
   b) 3
10. Teacher to check pictures.
    b) $14 \div 5 = 2$ R 4
    c) $11 \div 5 = 2$ R 1
    d) $15 \div 3 = 5$ or $15 \div 3 = 5$ R 0
11. a) $32 \div 7 = 4$ R 4. They will need 5 minivans.
    b) There will be 4 players in the minivan that is not full.

AP Book N7-2
page 4

1. a) 10, 15, 20, 25, 30, 35, 40, 45, 50
   b) Circle 15, 35, and 40.
   c) yes. If you add two multiples of 5, the sum is also a multiple of 5.
2. a) Teacher to check.
   b) 0
   c) 0
   d) A number is a multiple of 10 is the ones digit is 0.
3. a) Teacher to check.
   b) 2, 4, 6, 8, 0
   c) 2, 4, 6, 8, 0
   d) A number has 2 as a factor if the ones digit is 2, 4, 6, 8, or 0.
4. a) yes
   b) Sample answer: 50 is a multiple of 5, but 2 is not. A sum is a multiple of 5 if both addends are multiples of 5.
5. a) Teacher to check.
   b) 5, 0
   c) 5, 0
   d) A number is divisible by 5 if the ones digit is 5 or 0.
6. Circle 8, 96, 250, 438, 1930, and 42.
7. Circle 15, 80, 400, 745, and 9780.
8. a) Underline 250 and 1930.
   b) 10
9. a) Teacher to check.
   b) intersection. Numbers that are divisible by 10 are in the intersection because they have both 2 and 5 as factors.
   c) 0, 2, 5

AP Book N7-3
page 6

1. a) Teacher to check.
   b) 2, 6, 0
   c) 4, 8
   d) 4, 8
   e) 2, 6, 0
2. a) yes
   b) yes. Sample answer: 20 is a multiple of 4. Any multiple of 20 can be written as a sum of 20s, and the sum of multiples of 4 are also multiples of 4.
   c) yes. Sample answer: The sum of two multiples of 4 is a multiple of 4.
3. Circle 28, 36, and 88.
4. Sample answer: Multiples of 4 are also multiples of 2. No odd number is a multiple of 2.
5. a) yes
   b) yes
   c) yes. Since 100 is a multiple of 4, any multiple of 100 is also a multiple of 4.
6. a) Circle 76, 92, 288, 876, and 1580.
   b) yes. Sample answer: A number is divisible by 4 if you can divide it by 2 twice. If half a number is even, then you can divide the half by 2, so the number itself is divisible by 4.
7. b) $48 \div 2 = 24$; $24 \div 2 = 12$
   c) $84 \div 2 = 42$; $42 \div 2 = 21$
   d) $124 \div 2 = 62$; $62 \div 2 = 31$
8. a) no
   b) yes
   c) yes. Sample answer: Any multiple of a number that is divisible by 8 is also divisible by 8.
9. a) Underline 20, 72, 100, 404, and 2480.
   b) Circle 72 and 310.
   c) Teacher to check.
   d) The multiple of 8 only region is empty.

Bonus
no. Since 8 is a multiple of 4, any multiple of 8 is also a multiple of 4.

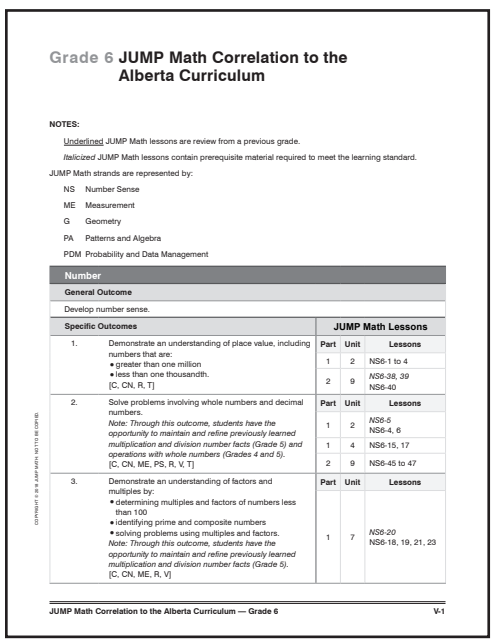
AP Book N7-4
page 8

1. a) Teacher to check.
   b) 9
   c) yes
   d) 18
   e) yes

Answer Keys for AP Book 7.1 Western edition I-1

Curriculum Correlations

Curriculum correlations are documents that show, for each region and grade level, how JUMP Math lessons are aligned to curriculum learning outcomes in Alberta, British Columbia, Manitoba, and Saskatchewan.



Grade 6 JUMP Math Correlation to the Alberta Curriculum

NOTES:

Underlined JUMP Math lessons are review from a previous grade.

Italicized JUMP Math lessons contain prerequisite material required to meet the learning standard.

JUMP Math strands are represented by:

NS Number Sense
ME Measurement
G Geometry
PA Patterns and Algebra
PDM Probability and Data Management

Number

General Outcome

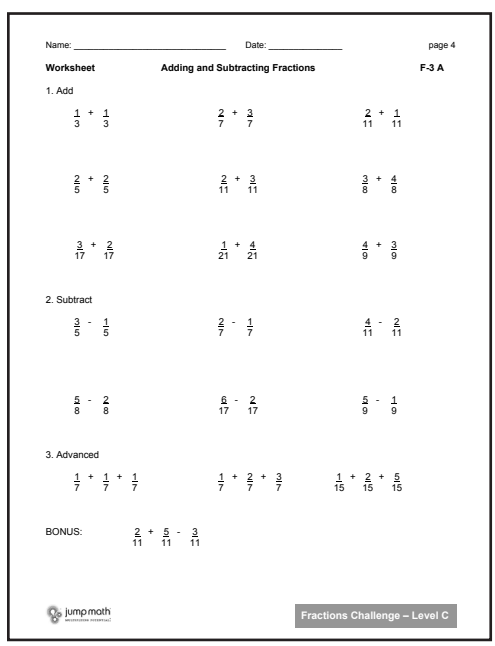
Develop number sense.

Specific Outcomes		JUMP Math Lessons		
1.	Demonstrate an understanding of place value, including numbers that are: • greater than one million • less than one thousandth. [C, CN, R, T]	**Part**	**Unit**	**Lessons**
		1	2	NS6-1 to 4
		2	9	*NS6-38, 39* NS6-40
2.	Solve problems involving whole numbers and decimal numbers. *Note: Through this outcome, students have the opportunity to maintain and refine previously learned multiplication and division number facts (Grade 5) and operations with whole numbers (Grades 4 and 5).* [C, CN, ME, PS, R, V, T]	**Part**	**Unit**	**Lessons**
		1	2	*NS6-5* NS6-4, 6
		1	4	NS6-15, 17
		2	9	NS6-45 to 47
3.	Demonstrate an understanding of factors and multiples by: • determining multiples and factors of numbers less than 100 • identifying prime and composite numbers • solving problems using multiples and factors. *Note: Through this outcome, students have the opportunity to maintain and refine previously learned multiplication and division number facts (Grade 5).* [C, CN, ME, R, V]	**Part**	**Unit**	**Lessons**
		1	7	*NS6-20* NS6-18, 19, 21, 23

JUMP Math Correlation to the Alberta Curriculum — Grade 6 V-1

Confidence Building Units

There are five Confidence Building Units provided separately from the other classroom materials. Their purpose is to generate excitement in the classroom and convince all students that they are good at mathematics. Each Confidence Building Unit includes short, carefully designed "challenge lessons" in a Teacher's Manual and associated student practice pages. We recommend that teachers only use these units for no more than five days, preferably at the beginning of the school year.



Name: _____ Date: _____ page 4

Worksheet **Adding and Subtracting Fractions** **F-3 A**

1. Add

$\frac{1}{3} + \frac{1}{3}$ $\quad \frac{2}{7} + \frac{3}{7}$ $\quad \frac{2}{11} + \frac{1}{11}$

$\frac{2}{5} + \frac{2}{5}$ $\quad \frac{2}{11} + \frac{3}{11}$ $\quad \frac{3}{8} + \frac{4}{8}$

$\frac{3}{17} + \frac{2}{17}$ $\quad \frac{1}{21} + \frac{4}{21}$ $\quad \frac{4}{9} + \frac{3}{9}$

2. Subtract

$\frac{3}{5} - \frac{1}{5}$ $\quad \frac{2}{7} - \frac{1}{7}$ $\quad \frac{4}{11} - \frac{2}{11}$

$\frac{5}{8} - \frac{2}{8}$ $\quad \frac{6}{17} - \frac{2}{17}$ $\quad \frac{5}{9} - \frac{1}{9}$

3. Advanced

$\frac{1}{7} + \frac{1}{7} + \frac{1}{7}$ $\quad \frac{1}{7} + \frac{2}{7} + \frac{3}{7}$ $\quad \frac{1}{15} + \frac{2}{15} + \frac{5}{15}$

BONUS: $\frac{2}{11} + \frac{5}{11} - \frac{3}{11}$

jump math

Fractions Challenge – Level C

Teaching with JUMP Math

Professional Development

JUMP Math provides a variety of engaging on-site and online professional learning (PD) opportunities throughout the year. Each PD session is designed to enhance and support instructional practices, leading to improved success for students. Learn from our team of experienced educators who work closely with K–8 classroom teachers, principals, administrators, and parents to use research-informed instruction, practice, and assessment methods.

You can learn more about our professional learning opportunities from the Professional Learning section at www.jumpmath.org, or by getting in touch (see the Contact Us section).

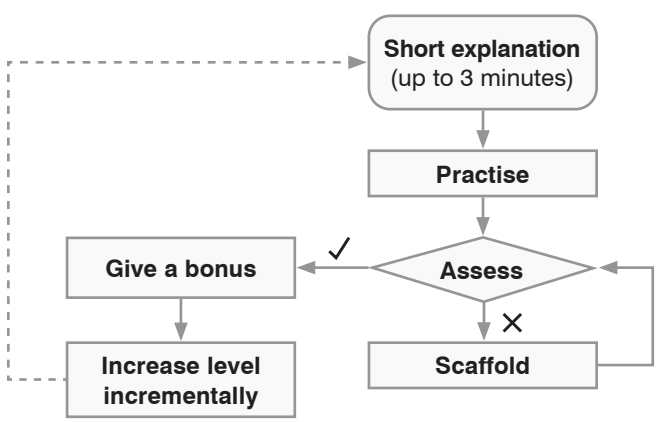
Teaching Order

To use JUMP Math to its full effect, you should teach the units in the suggested order and follow the lesson plans very closely. You should teach approximately one lesson per day; this will allow enough time to teach all of the lessons labelled as required and recommended for your curriculum.

Lesson Structure

JUMP Math lessons are designed to keep the class engaged and moving through the material together. A typical lesson begins with a mental math minute, followed by a brief review of relevant previous material. This recalls knowledge that will be needed in the current lesson and starts students on a comfortable footing. Some lessons include Investigations. These pieces of structured inquiry require careful recording and tracking of information. During Investigations, students work independently in the AP Book, then reflect on their findings as a class.

The body of the lesson is taught in manageable pieces, with frequent opportunities for student participation and assessment. The bold descriptive subheadings in the lesson plans outline the content and flow of the lesson. The key points that follow the subheadings describe the essential understandings that students need to achieve throughout this part of the lesson. Within these sections, you will teach explicitly only for brief periods before you ask a question or assign a challenge that students can explore independently in pairs or in groups. These challenges are taken up and discussed immediately, with the expectation that all (or virtually all) students will understand and master the material before moving on. The lesson continues with an incremental increase in difficulty and another short explanation.



After you teach a lesson, or a significant portion of a lesson, students work independently on a more significant task, usually an activity or on corresponding pages in the Assessment & Practice Book. As they work, you can circulate around the class and help students who need assistance. When students complete this summative task, they can work on some of the extensions that are included at the end of most lesson plans.

Instructional Strategies

Classroom Environment

Here are some effective techniques to keep students of all ability levels engaged in the classroom.

Build confidence and excitement about math.
Engaging the entire class in lessons is not simply a matter of fairness; it is also a matter of efficiency. While the idea may seem counterintuitive, you will enable stronger students to go further by helping students who struggle. You can create a real sense of excitement about math in the classroom simply by convincing struggling students that they can do well in the subject. The class will cover far more material in the year, and students who excel will no longer have to hide their love of math for fear of appearing strange or different. In addition to the everyday techniques described below, you may wish to use a Confidence Building Unit at the beginning of the year, especially for students who are new to JUMP Math. Quizzes can also work as confidence builders when administered to students who are prepared to succeed.

Working in pairs or groups.
Promote communication by encouraging students to work in pairs or in small groups. Support students to organize and justify their thinking by demonstrating how to use mathematical terminology, symbols, models, and manipulatives as they discuss and share their ideas. Student groupings should be random and vary throughout the week. Whole-class strategy talks are another way to practise problem-solving and communication, and to compare between various strategies. A detailed description of strategy talks appears on BLM Strategy Talks (p. H-2).

Allow students enough time to think.
Discuss one or two skills or concepts at a time with the whole class, allowing students to develop ideas by themselves, but giving hints and guidance when necessary (the lesson plans show you how to do this). Ask questions in several different ways and allow students time to think and share their solutions with a partner before you solicit an answer. After presenting a particular concept, do not go on until all students are assessed and show a readiness to move ahead.

Use bonus questions.
When students have mastered a skill or concept, raise the bar slightly by challenging them to answer a question that is only incrementally more difficult or complex than the questions previously assigned. Be ready to write bonus questions on the board from time to time during the lesson for students who finish their tasks or quizzes early. Bonus questions are included in most of the lesson plans. While students who finish quickly are occupied with these questions, circulate around the class doing spot checks of the work of students who are struggling. The bonus questions you create should generally be simple extensions of the material. (See “How to Create Bonus Questions” on p. A-19).

Use extension questions.
Extension questions should be used to keep students who work quickly engaged in the content of the lesson; they can also be assigned as a group exploration activity. Extension questions don’t often introduce any skills or concepts that aren’t taught in the lesson, so students who complete their work quickly should be able to work on these questions independently. Placing students into random groupings allows them to work together to find solutions to more challenging problems. Students can submit work for assessment either as a group or individually.

Support independent work.
Take the time to show students how to develop independent work habits during a lesson and while working on their own. The length of time required for this will vary depending upon age, attention, and maturity levels, so be prepared to model and demonstrate these skills over the course of several days or weeks, as needed.

During a lesson. Explain and demonstrate effective use of whiteboards and notebooks as a practice tool throughout the learning process. Emphasize that these tools are useful in keeping track of important information; recording examples of mathematical procedures, models, and conventions; and exploring methods for solving problems.

Have students use grid paper notebooks instead of regular lined notebooks, which help with, for example, lining up digits, making tables, drawing shapes such as rectangles, and drawing coordinate planes, and are an invaluable tool for students with diagnosed and undiagnosed problems in visual organization. Demonstrate effective use of grids on the board; if your board does not have a grid section, photocopy BLM 1 cm Grid Paper onto a transparency and project it onto the board (so you can erase pictures from the board without erasing the grid).

Following a lesson. Guide students to navigate the corresponding pages in the Assessment & Practice Books by showing them where to find and how to use:

- worked-out examples
- hints and memory aids
- prompts to use a notebook
- bonus and investigation questions

Teacher Explanations

Explain and demonstrate the work that you expect your students to do. If a student doesn't understand an explanation, select one to three students to rephrase or reword explanations. Sometimes lessons go too fast for a student or component concepts are inadvertently skipped. It is always possible to make an increment smaller. Taking time to reflect on what worked and didn't work in a lesson can help you reach even students who are having the most difficulty. When students are struggling, always ask, "How could I have improved the lesson?"

Continuous Assessment

The progression of learning contained in each JUMP Math lesson enables active and ongoing assessment, often referred to as "continuous assessment." Through observation, questioning, and interaction with students as they work, you are readily able to check for understanding, identify and correct misunderstandings, and differentiate instruction with timely interventions. Continuous assessment often provides a more accurate and complete picture of a student's ability and has a positive impact on learning. Here are some strategies for immediate assessment.

Signalling. When a problem has a simple answer, such as one word, a short phrase, or even a sign (such as $+$ or $-$), ask students to signal their answer with, for example, a thumbs up for yes or a thumbs down for no. Signalling is also useful when you have multiple-choice questions number the answers and have students hold up the number of fingers corresponding to the answer they think is correct.

Signalling is most effective when students signal their answers at the same time. Give students adequate thinking time, and then have them show their answer on the count of three. Make sure students are familiar with the structure before using it in content-learning situations. Have students practise signalling the answers at the same time beforehand.

Individual whiteboards. Provide students with individual whiteboards to use throughout the lesson as they work through challenge tasks. Similar to the strategy of signalling, have students hold up their boards together on the count of three.

Using JUMP Math Components Together

Planning to Teach

Read each lesson from beginning to end, paying attention to the progression of learning that starts with the review of prior knowledge and ends with the extension questions. Following the initial reading, go back through the lesson and:

1. Review the lesson's mental math minute and decide which skills you will introduce, practise, and assess prior to teaching a lesson. It is most effective to concentrate on one or two skills per day. Begin each math class with a quick review of the mental math skills that were explored the previous day and then introduce the new skill. Do not introduce new skills until you have verified mastery of the skills introduced in earlier lessons.

2. Link the layers of skill development in the print lesson to the corresponding digital lesson slides. Decide which slides you will use, which slides you will modify or add, and how you will use the slides to support your teaching and student practice.

3. Re-read the lesson and consider how you may need to modify or adapt the lesson to meet the needs of your students.

   Consider the following:

   - Do my students have the prerequisite skills?
   - How much review will I need?
   - What materials, including Blackline Masters, will I need to gather and/or copy?

   Decide in advance:

   - Which prompts, activities, and extensions will I use?
   - Will I need to create more bonus questions?
   - What is the most effective means of organizing my students for learning, discussion, and practice?
   - How will I assess?
   - What questions will I have ready for struggling students?
   - Which questions will I have ready for students who grasp the concepts quickly?

4. Preview the corresponding pages in the Assessment & Practice Books. You may wish to use some of the exercises as models for practice during the lesson, or you may want to determine how many of the exercises you will assign to students.

Use of the Assessment & Practice Books

The Assessment & Practice Books are designed to be used in tandem with the lesson plans. Before assigning questions from the Assessment & Practice Books, it is important to verify that all students are prepared to answer the questions without your help (or with minimal help). Never allow students to work ahead in the Assessment & Practice Books on material you haven't covered with the class. Students who finish the assigned pages from the Assessment & Practice Books early should be assigned bonus questions similar to the questions on the page or extension questions from the lesson plans. Write the bonus questions on the board or have extra pages prepared and ask students to answer the questions in their notebooks. While students are working independently on the bonus questions, you can spend extra time with anyone who needs help.

Use of the Assessment Tools

The most effective assessment strategy is one where student learning is verified throughout their learning process, and not simply at the end of a unit. We recommend assigning a short quiz every four to five lessons to ensure students are working toward mastery of the skills explored in those lessons. Information gleaned from quizzes will help you catch and correct misunderstandings through review or re-teaching. At the end of each unit, assign a test to assess the depth and consolidation of all of the skills covered in the unit.

How to Create Bonus Questions

You can make math lessons more exciting (and also make time to check the work of students who need extra time) if you know how to create engaging bonus questions. Bonus questions generally shouldn't be based on new concepts and they don't have to be extremely difficult to capture the attention of students. Students are more likely to consolidate their understanding and commit material to memory when they are attentive and engaged in appropriately challenging work.

Before You Create Bonus Questions

- Bonus questions shouldn't look tedious; avoid giving students an endless series of calculations that appear to have no purpose.
- Assign only a few questions at a time.
- It helps if you are excited when you assign bonus questions; students should feel like they are involved in a quest, faced with increasingly difficult challenges that they believe they can meet.
- Students can make conceptual gains even when the bonus questions vary the task only slightly, such as involving larger numbers or more terms or elements.
- Generalizing from smaller to larger numbers will help all students develop the ability to hold more material in their working memory, follow a series of steps in a procedure, stay on task, and see patterns and apply rules in increasingly complex situations.
- Be careful not to introduce any new skills or concepts in bonus questions.

Creating Bonus Questions

Here are some strategies you can use to create questions that will look hard enough to interest students who work quickly, but that all students can aspire to answer.

Make the numbers in a problem larger.

The simplest way to create bonus questions without introducing any new concepts is to make the numbers in a problem larger or to introduce extra terms. Students of all ages love showing off with larger numbers or with more challenging-looking rules and procedures. You can use this strategy in almost any lesson. For example, the following problems all use place value addition without regrouping and can be done by students who have mastered adding in columns.

Example

Add.

$$\begin{array}{r} 2 \\ +\ 4 \\ \hline \end{array} \longrightarrow \begin{array}{r} 23 \\ +\ 45 \\ \hline \end{array} \longrightarrow \begin{array}{r} 235 \\ +\ 452 \\ \hline \end{array} \longrightarrow \begin{array}{r} 2354 \\ +\ 4521 \\ \hline \end{array}$$

Make a mistake and ask students to correct it.

Students love correcting a teacher's mistakes, and you can find a way to make mistakes in any lesson. For instance, if you are teaching additive sequences, you might write the following on the board:

Where is the mistake?

3, 7, 12, 16, 20, …

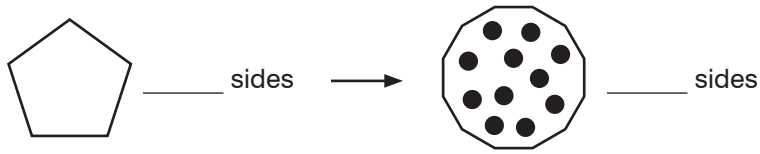
Tell students you created the sequence by adding the same number repeatedly to the initial number, but you think you made a mistake. Ask them to find the mistake and explain where you went wrong.

Increase the complexity of presentation.

When counting or matching, move objects farther apart or arrange them less neatly. In geometry lessons, combine several distractors, such as position, pattern, background, or number of sides, to hide shapes. In the higher grades, add distractors to word problems.

Example

Count the number of sides.



Partially complete a problem and ask students to say what is missing.

When matching to compare quantity, omit a matching line. When finding triangles, skip a few. When finding pairs that add to 5 or 10, create a list that is missing one addition. When teaching the counting sequence by 1s, 2s, 5s, or 10s, write the first ten numbers in a ten-frame but omit some numbers. In the higher grades, omit a step when solving an equation and have students fill it in.

Example

Fill in the missing numbers.

2	4		8	10
12		16	18	

Use more elements.

When sorting, sort more objects into more categories. Add three or more numbers instead of only two numbers. Create longer expressions, with more parentheses, to be evaluated.

Example

Evaluate.

$15 + (7 \times 3 - 1) \longrightarrow (3 \times 5 - 7) \times 5 \div (16 - 6)$

Make differences more subtle.

When the task is noticing differences, such as comparing numbers or distinguishing circles from non-circles, make the differences more subtle. For example, when comparing fractions with the same denominator, use numerators that vary by a single digit. Draw graphs on smaller grids or place points not on grid lines so that students have to pay attention to detail.

Example

Which is greater?

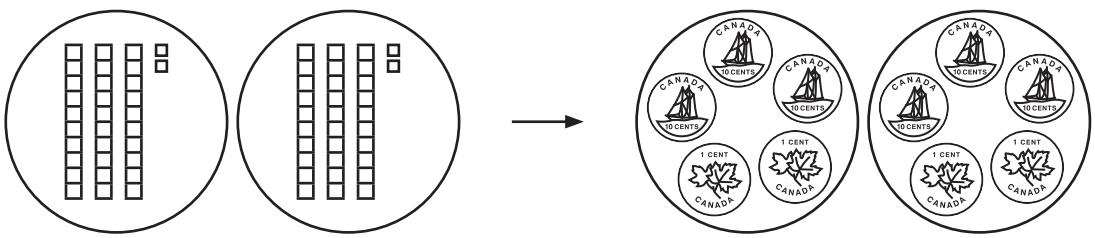
$\frac{8}{11}$ or $\frac{9}{11}$ $\longrightarrow$ $\frac{54\,645}{4\,567\,341}$ or $\frac{54\,154}{4\,567\,341}$

Vary the presentation of the problem.

Since students often under-generalize concepts, using different materials to present the same problem can seem like an entirely new problem. For example, you can use different shapes in models. Ask students to use triangles or squares instead of dots when drawing a model for a word problem, or have students identify fractions of a star instead of a circle. Division can be modelled with money instead of tens blocks. Represent the same repeated pattern with numbers, letters, colours, and shapes. When working with fractions or decimals, present a problem using money. Write rates in unconventional ways, such as hours/mile, or reverse the axes on graphs.

Example

Model $2\overline{)64}$.



Look for applications of the concept.

Lessons generally begin from a concrete representation of a concept and move towards abstract ideas. Once students have been taught an abstract idea, reapplying it can be an added challenge. For example, once students have mastered comparing numbers, present problems such as, "Thirty-seven students are going on a school trip. The bus has forty-five seats. Are there enough seats for everyone?" For another example, students could identify applications of the Pythagorean Theorem in word problems.

Example

When teaching fractions of whole numbers, ask how many months are in …

a) $\frac{1}{2}$ a year? b) $\frac{2}{3}$ of a year? c) $1\frac{1}{2}$ years?

Use extension questions from the lesson plans.

As students become more confident, create questions that challenge them more and that extend the ideas in the lesson. The JUMP Math lesson plans contain many extension questions that students can explore. These extension questions allow students to develop a deeper knowledge of the curriculum by working on incremental variations on the same topic. Extensions often require minimal or no teaching. Extensions that require some guidance can be taught to the whole class or to small groups.

Mental Math

Contents of Mental Math Section

What is Mental Math?
Addition and Subtraction Fluency
Addition and Subtraction Using Fingers
Number Sense Skills Progression
Multiplication Basics
Addition and Subtraction
Multiplication—Distributive Law
Subtraction Skills
Multiplication and Division
Mental Math Skills Checklist

What is Mental Math?

Mental math is a mathematical framework that includes number sense, computational fluency, and the application of number concepts through purposeful and varied practice, not just rote memorization. In JUMP Math, we recommend exploring mental math through regular practice.

Addition and Subtraction Fluency

Students who don't know how to add, subtract, or estimate readily are at a great disadvantage in mathematics. Students can learn to mentally add and subtract numbers in a short time if they are given daily practice in a few basic skills. The skills and concepts outlined in this section have been studied in earlier grades, but all students will benefit from briefly reviewing them.

At the beginning of Grade 7, if students do not know their addition and subtraction facts within 18, teach them to add and subtract with their fingers using the methods shown below to facilitate working with other concepts. However, it is essential to wean students off using their fingers to add and subtract and have them move to using more efficient methods, as outlined in the Number Sense Skills Progression section. Reinforce basic facts using practice, games, and flash cards.

Addition and Subtraction Using Fingers

To add a one-digit number to another number, such as $4 + 8$, say "8" (the higher number) with your fist closed. Count up from 8, raising one finger at a time. Stop when four fingers are raised:

8 9 10 11 12

You said "12" when you raised the fourth finger, so $4 + 8 = 12$.

1. Add.

   a) $5 + 2$ b) $2 + 3$ c) $6 + 12$ d) $9 + 2$ e) $2 + 14$ f) $12 + 7$

   g) $15 + 3$ h) $6 + 13$ i) $11 + 4$ j) $3 + 19$ k) $21 + 5$ l) $4 + 56$

To subtract numbers that are close together, such as $9 - 5$, say "5" (the second number) with your fist closed. Count up from 5, raising one finger at a time. Stop when you say the first number (9):

5 6 7 8 9

You have four fingers up when you say "9," so $9 - 5 = 4$.

2. Subtract.

a) $7 - 5$ b) $8 - 6$ c) $5 - 3$ d) $5 - 2$ e) $9 - 6$ f) $10 - 5$

g) $11 - 7$ h) $17 - 14$ i) $33 - 31$ j) $27 - 24$ k) $43 - 39$ l) $62 - 58$

To subtract one-digit numbers from large numbers, such as $72 - 4$, say "72" (the first number) with your fist closed. Count back from 72, raising one finger at a time. Stop when you have four fingers up:

72 71 70 69 68

You said "68" when you raised the fourth finger, so $72 - 4 = 68$.

3. Subtract.

a) $67 - 5$ b) $78 - 6$ c) $85 - 3$ d) $95 - 2$ e) $89 - 6$ f) $70 - 5$

g) $61 - 7$ h) $117 - 4$ i) $133 - 5$ j) $227 - 4$ k) $443 - 9$ l) $962 - 8$

Number Sense Skills Progression

The following skills are presented in the order required by the order of topics taught in the Grade 7 Teacher Resource; they rely on knowledge students obtained in previous grades. For example, students in Grade 7 may not have fluency in multiplication, but they should be familiar with the operation. Where necessary, the skill sections include a brief explanation of why the technique works, followed by exercises. These exercises can be used as diagnostic tools when combined with the mental math skills checklists.

The same progression of skills is followed in the mental math minutes of the first five units of the Teacher Resource. Each mental math minute includes teaching instruction and practice, which is sometimes the same as the exercises found below.

Multiplication Basics

NOTE: Skip counting is a useful first step in learning how to multiply. Before proceeding to multiplication, make sure that all students can skip count by 2s, 3s, 4s, and 5s on one hand.

Skill 1: Doubling

Doubling means adding a number to itself, which is the same as multiplying the number by two.

Example: $2 \times 6 = 6 + 6 = 12$

Exercises

a) 2×3 b) 2×6 c) 2×4 d) 7×2 e) 9×2 f) 2×8

Answers: a) 6, b) 12, c) 8, d) 14, e) 18, f) 16

To double two-digit numbers, double the tens and ones separately.

Example: $2 \times 16 = 20 + 12 = 32$

Exercises

a) 22×2 b) 2×36 c) 2×24 d) 18×2 e) 49×2 f) 2×28

Answers: a) 44, b) 72, c) 48, d) 36, e) 98, f) 56

Skill 2: Multiplying by 2, 5, and 10

Since multiplication can be seen as repeated addition, you can use skip counting to recall the times tables. The order of the factors does not matter in multiplication, so you can skip count by the number that is easiest to remember.

Example: $4 \times 5 = 5 + 5 + 5 + 5 = 20$

Students who are struggling can keep track using their fingers. For example, to find the product of 3×2, count by 2s until you have raised three fingers:

You said "6" when you raised the third finger, so $3 \times 2 = 6$.

Exercises: Multiply.

a) 3×5 b) 8×2 c) 6×10 d) 8×5 e) 6×5 f) 7×2

g) 7×5 h) 9×5 i) 9×10 j) 9×2 k) 4×10 l) 8×10

Answers: a) 15, b) 16, c) 60, d) 40, e) 30, f) 14, g) 35, h) 45, i) 90, j) 18, k) 40, l) 80

Skill 3: Multiplying by 4 and 8

You can double twice to multiply by 4 and double 3 times to multiply by 8, because $4 = 2 \times 2$ and $8 = 2 \times 2 \times 2$.

Exercises

a) 4×3 b) 4×6 c) 8×4 d) 7×4 e) 9×8 f) 7×8

Answers: a) 12, b) 24, c) 32, d) 28, e) 72, f) 56

Skill 4: Multiplying by 3 using skip counting by 3s

Students who are struggling can use their fingers to keep track.

Exercises

a) 4×3 b) 3×6 c) 8×3 d) 7×3 e) 3×5 f) 3×9

Answers: a) 12, b) 18, c) 24, d) 21, e) 15, f) 27

Addition and Subtraction

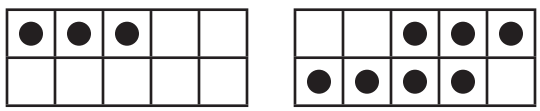
Skill 5: Pairs that add to 10

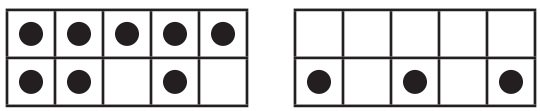
You can mentally move dots from one ten-frame to the other. Is the frame full?

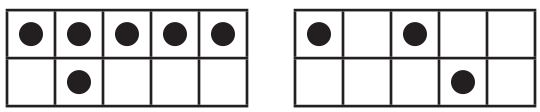
For numerical questions, students who are struggling can initially use their fingers to show the first number. If the second number matches the number of fingers that are not up, the pair adds to 10.

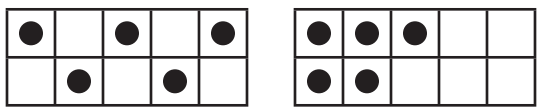
Exercises

1. Does the number of dots in the two ten-frames add to 10?

a) 

b) 

c) 

d) 

Answers: a) yes, b) no, c) no, d) yes

2. Do the numbers add to 10?

a) $6 + 7$ b) $5 + 4$ c) $1 + 9$ d) $9 + 3$ e) $8 + 2$

f) $5 + 3$ g) $4 + 6$ h) $8 + 3$ i) $8 + 5$ j) $2 + 7$

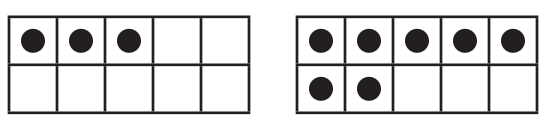
Answers: a) no, b) no, c) yes, d) no, e) yes, f) no, g) yes, h) no, i) no, j) no

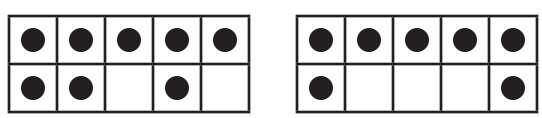
Skill 6: Deciding if regrouping is required when adding 2 one-digit numbers

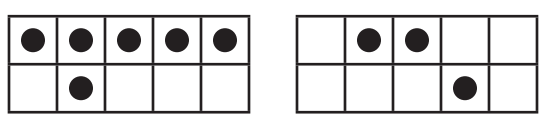
Students can mentally move dots from one ten-frame to the other to see if the frame is full or imagine their fingers on both hands.

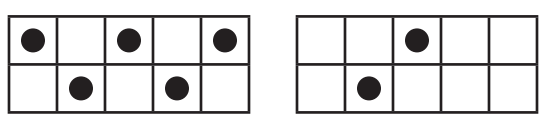
Is the total of the dots at least 10 or are all the fingers on two hands raised?

Exercises: Do you need to regroup?

a) 

b) 

c) 

d) 

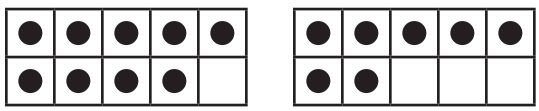
e) $6 + 7$ f) $5 + 4$ g) $7 + 9$ h) $9 + 3$ i) $8 + 2$

j) $5 + 7$ k) $6 + 3$ l) $7 + 3$ m) $8 + 5$ n) $6 + 5$

Answers: a) yes, b) yes, c) no, d) no, e) yes, f) no, g) yes, h) yes, i) yes, j) yes, k) no, l) yes, m) yes, n) yes

Skill 7: Conceptual subitizing to add any two numbers whose sum is within 20

Example: How many counters are there in total?

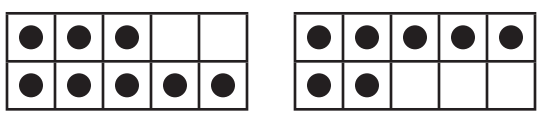


Sample answers

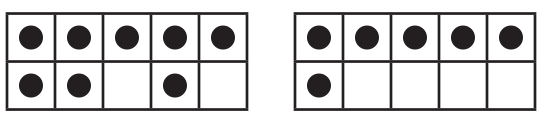
- Imagine moving a counter from the frame with 7 to the frame with 9. There are $10 + 6 = 16$ counters.
- There are two full rows of 5, which is 10 counters. The rows that are not full have $4 + 2 = 6$ counters, so there are $10 + 6 = 16$ counters.

Exercises: How many counters are there in total?

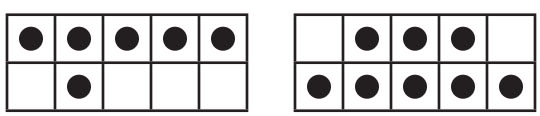
a)



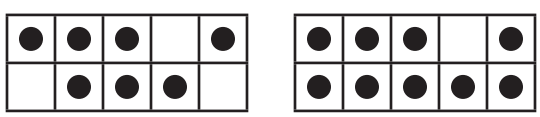
b)



c)



d)



Answers: a) 15, b) 14, c) 14, d) 16

Skill 8: Addition within 20

Look for a number that makes 10 with one of the addends and subtract that number from the other addend. This is like moving counters from one ten-frame to the other.

Example: To add $8 + 7$, think about what number makes 10 with 8. (2)

$8 + 7$
$= 8 + 2 + 5$
$= 10 + 5$
$= 15$

Exercises: Add.

a) $9 + 7$ b) $8 + 9$ c) $6 + 7$ d) $9 + 3$

e) $8 + 5$ f) $5 + 7$ g) $4 + 9$ h) $9 + 9$

Answers: a) 16, b) 17, c) 13, d) 12, e) 13, f) 12, g) 13, h) 18

Skill 9: Subtracting any one-digit number from 10 using pairs that add to 10

Think of the related addition. What number would make 10 with the number you are subtracting from 10?

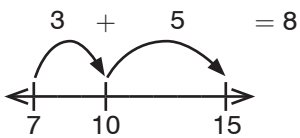
Exercises: Subtract.

a) $10 - 7$ b) $10 - 9$ c) $10 - 4$ d) $10 - 3$ e) $10 - 5$ f) $10 - 2$

Answers: a) 3, b) 1, c) 6, d) 7, e) 5, f) 8

Skill 10: Subtraction within 20 using addition

Example: To subtract $15 - 7$, you can think of it as $7 + ? = 15$. What number will bring 7 to 10? What number will bring 10 to 15?



So, $15 - 7 = 8$.

Exercises: Subtract.

a) $16 - 7$ b) $13 - 9$ c) $13 - 6$ d) $15 - 6$ e) $14 - 7$ f) $17 - 8$

Answers: a) 9, b) 4, c) 7, d) 9, e) 7, f) 9

Skill 11: Deciding if regrouping is required when adding a one-digit and a two-digit number

Go through the examples below in order as a class. Do you need to regroup? What changed in this question to make regrouping necessary? When do you need to regroup?

Examples

a) $34 + 3$ b) $34 + 4$ c) $34 + 6$ d) $34 + 8$

e) $45 + 4$ f) $45 + 5$ g) $45 + 6$ h) $45 + 9$

Exercises: Do you need to regroup? Add.

a) $43 + 3$ b) $42 + 8$ c) $54 + 9$ d) $48 + 7$

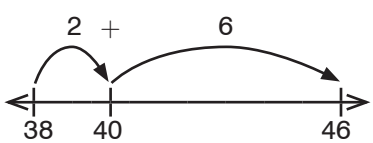
e) $54 + 2$ f) $49 + 2$ g) $65 + 3$ h) $65 + 8$

Answers: a) no, 46; b) yes, 50; c) yes, 63; d) yes, 55; e) no, 56; f) yes, 51; g) no, 68; h) yes, 73

Skill 12: Adding a one-digit number using the nearest multiple of 10

Examples

$38 + 8$



$56 + 7$

56 is 4 away from 60, and 60 is 3 away from 63.
So $56 + 7 = 56 + 4 + 3 = 60 + 3 = 63$.

Exercises

1. What number do you need to add to get to the next multiple of 10? What is the next multiple of 10?

   a) 17 b) 36 c) 52 d) 91 e) 64 f) 83

   Answers: a) 3, 20; b) 4, 40; c) 8, 60; d) 9, 100; e) 6, 70; f) 7, 90

2. Add.

   a) $45 + 6$ b) $63 + 8$ c) $74 + 9$ d) $88 + 9$

   e) $99 + 2$ f) $37 + 9$ g) $53 + 8$ h) $87 + 5$

   Answers: a) 51, b) 71, c) 83, d) 97, e) 101, f) 46, g) 61, h) 92

Skill 13: Adding tens and ones separately to add two-digit numbers without regrouping

Remind students that they can add the ones and tens separately to add two-digit numbers.

Exercises: Add the tens and the ones separately. Then add the totals.

a) $34 + 43$ b) $34 + 42$ c) $31 + 56$ d) $61 + 27$

e) $45 + 42$ f) $37 + 62$ g) $48 + 51$ h) $45 + 24$

Answers: a) 77, b) 76, c) 87, d) 8, e) 87, f) 99, g) 99, h) 69

Skill 14: Adding tens and ones separately to add two-digit numbers with regrouping

Remind students that sometimes, when adding two-digit numbers, the sum of the ones is more than 10, which needs regrouping.

Exercises: Add the tens and the ones separately. Then add the totals.

a) $34 + 47$ b) $43 + 47$ c) $34 + 56$ d) $39 + 28$

e) $45 + 25$ f) $25 + 69$ g) $55 + 36$ h) $85 + 28$

Answers: a) 81, b) 90, c) 90, d) 67, e) 70, f) 94, g) 91, h) 113

Skill 15: Adding two-digit numbers with and without regrouping

This skill combines the previous two skills and offers mixed practice.

Exercises: Add.

a) $34 + 43$ b) $34 + 42$ c) $34 + 46$ d) $34 + 48$

e) $45 + 42$ f) $45 + 62$ g) $45 + 65$ h) $45 + 78$

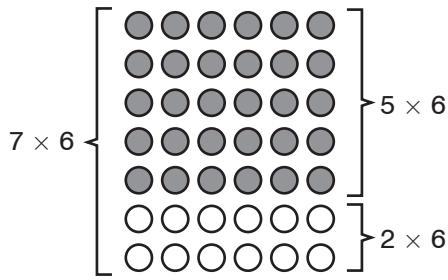
Answers: a) 77, b) 76, c) 80, d) 82, e) 87, f) 107, g) 110, h) 123

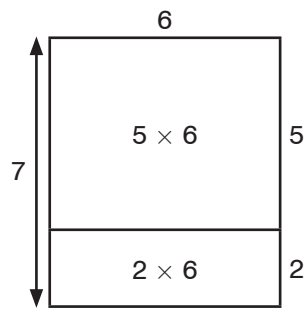
Multiplication—Distributive Law

Skill 16: Distributive law

You can split an array or a rectangle into two parts to calculate the total number of dots or the area.

Example: $7 \times 6 = 5 \times 6 + 2 \times 6$





Students might prefer to use multiples other than 5; let them use whatever multiples they are most comfortable with.

Exercises

1. Rewrite each multiplication using multiples of 5 and the distributive law.

   a) $6 \times 7 = 6 \times \underline{\ 5\ } + 6 \times \underline{\ 2\ }$

   b) $6 \times 8 = 6 \times \underline{\ 5\ } + 6 \times \underline{\quad}$

   c) $7 \times 9 = 7 \times \underline{\quad} + 7 \times \underline{\quad}$

   d) $8 \times 9 = 8 \times \underline{\quad} + 8 \times \underline{\quad}$

   e) $9 \times 7 = 9 \times \underline{\quad} + 9 \times \underline{\quad}$

   f) $9 \times 8 = 9 \times \underline{\quad} + 9 \times \underline{\quad}$

   Answers: b) 3; c) 5, 4; d) 5, 4; e) 5, 2; f) 5, 3

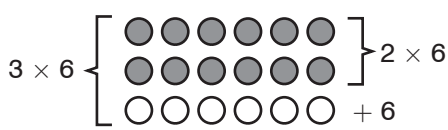
2. Find the products in Exercise 1.

   Answers: a) 42, b) 48, c) 63, d) 72, e) 63, f) 72

Skill 17: Multiplying by 3 using doubling

You can multiply by 3 using doubling plus one more.

Example



$3 \times 6 = 12 + 6 = 18$

Exercises: Multiply.

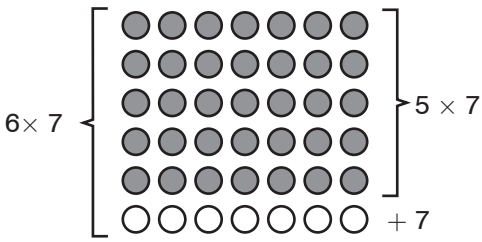
a) 3×5 b) 3×7 c) 3×10 d) 3×6 e) 3×9 f) 3×8

Answers: a) 15, b) 21, c) 30, d) 18, e) 27, f) 24

Skill 18: Multiplying by 6 using the distributive law

You can multiply by 6 by multiplying by 5 plus one more.

Example



$6 \times 7 = 35 + 7 = 42$

Exercises: Multiply.

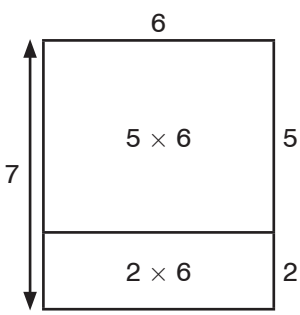
a) 6×5 b) 6×7 c) 6×10 d) 6×6 e) 6×9 f) 6×8

Answers: a) 30, b) 42, c) 60, d) 36, e) 54, f) 48

Skill 19: Multiplying by 7 using the distributive law

You can multiply by 7 by multiplying by 5 plus two more.

Example



Exercises: Multiply.

a) 7×5 b) 7×7 c) 7×9 d) 7×6

Bonus

e) 7×11 f) 7×12

Answers: a) 35, b) 49, c) 63, d) 42, Bonus: e) 77, f) 84

Skill 20: Multiplying by 9 using a pattern

Look for patterns in the multiples of 9:

$2 \times 9 = \underline{1}\,\underline{8}$
$3 \times 9 = \underline{2}\,\underline{7}$
$4 \times 9 = \underline{3}\,\underline{6}$
$5 \times 9 = \underline{4}\,\underline{5}$
$6 \times 9 = \underline{5}\,\underline{4}$
$7 \times 9 = \underline{6}\,\underline{3}$
$8 \times 9 = \underline{7}\,\underline{2}$
$9 \times 9 = \underline{8}\,\underline{1}$
$10 \times 9 = \underline{9}\,\underline{0}$

There are two important patterns: the tens digit of the product is one less than the first factor, and the digits of the product add to 9. You can find the ones digit by subtracting the tens digit from 9.

Exercises

1. Find the missing number.

   a) $7 + \_\_\_ = 9$ b) $4 + \_\_\_ = 9$ c) $3 + \_\_\_ = 9$

   d) $8 + \_\_\_ = 9$ e) $2 + \_\_\_ = 9$ f) $1 + \_\_\_ = 9$

   Answers: a) 2, b) 5, c) 6, d) 1, e) 7, f) 8

2. What is the tens digit of the product?

   a) 5×9 b) 4×9 c) 7×9 d) 8×9

   Answers: a) 4, b) 3, c) 6, d) 7

3. Multiply.

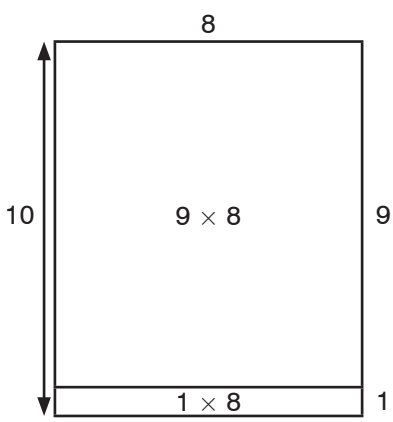
   a) 5×9 b) 4×9 c) 7×9 d) 8×9 e) 6×9 f) 9×9

   Answers: a) 45, b) 36, c) 63, d) 72, e) 54, f) 81

Skill 21: Using the distributive law in subtraction to multiply by 9

The distributive law works for subtraction, too. You can find the area of a smaller rectangle by subtracting from the area of a larger rectangle.

Example



$9 \times 8 = 10 \times 8 - 1 \times 8$
$= 80 - 8$
$= 72$

Note that this also explains the patterns of Skill 20: to find 8×9, use $8 \times 10 - 8$. In the product 8×10, the tens digit is 8. When we subtract 8, we regroup and reduce the tens digit by 1. So, in the final answer, the tens digit is 1 less than the first factor, or 7. The ones digit is $10 - 8$, which is equal to $9 - 7$.

Exercises: Multiply.

a) 3×9 b) 4×9 c) 7×9 d) 2×9 e) 6×9 f) 9×9

Answers: a) 27, b) 36, c) 63, d) 18, e) 54, f) 81

Skill 22: Multiplying within 10×10

This skill offers combined multiplication practice.

Exercises: Multiply.

a) 3×9 b) 4×8 c) 7×6 d) 9×9 e) 6×8 f) 8×9

g) 7×9 h) 4×7 i) 9×7 j) 5×8 k) 6×6 l) 8×7

Answers: a) 27, b) 32, c) 42, d) 81, e) 48, f) 72, g) 63, h) 28, i) 63, j) 40, k) 36, l) 56

Subtraction Skills

Skill 23: Subtracting two-digit numbers without regrouping (tens and ones separately)

Subtract two-digit numbers the same way you add them, by subtracting the tens and ones separately.

Example: $54 - 31$
$54 = 5$ tens $+ 4$ ones
$31 = 3$ tens $+ 1$ one
5 tens $- 3$ tens $= 2$ tens
4 ones $- 1$ one $= 3$ ones
$54 - 31 = 23$

Exercises: Subtract.

a) $39 - 27$ b) $47 - 26$ c) $58 - 48$ d) $64 - 42$

e) $77 - 30$ f) $83 - 31$ g) $99 - 66$ h) $245 - 123$

Answers: a) 12, b) 21, c) 10, d) 22, e) 47, f) 52, g) 33, h) 122

Skill 24: Deciding if regrouping is required when subtracting two-digit numbers

Have the class subtract $44 - 22$, $44 - 24$, and $44 - 27$ by subtracting tens and ones separately. What is the problem with the last subtraction? (there are not enough ones, regrouping is required) How do you know when regrouping is needed? (there are more ones in the second number than in the first)

Exercises: Do you need to regroup?

a) $39 - 27$ b) $47 - 28$ c) $58 - 38$ d) $64 - 49$

e) $77 - 38$ f) $83 - 31$ g) $96 - 69$ h) $45 - 23$

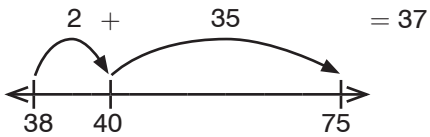
Answers: a) no, b) yes, c) no, d) yes, e) yes, f) no, g) yes, h) no

Skill 25: Subtracting two-digit numbers with regrouping by using the nearest multiple of 10

Use the next multiple of 10 to subtract two-digit numbers when regrouping is required.

Examples

$75 - 38$



$56 - 27$

27 is 3 away from 30, and 30 is 26 away from 56.
So $56 - 27 = 3 + 26 = 29$.

Exercises: Subtract.

a) $45 - 26$ b) $62 - 48$ c) $74 - 35$ d) $88 - 29$

e) $91 - 52$ f) $37 - 19$ g) $53 - 16$ h) $81 - 43$

Answers: a) 19, b) 14, c) 39, d) 59, e) 39, f) 18, g) 37, h) 38

Skill 26: Mixed subtraction

This skill combines the previous two skills and offers mixed practice.

Exercises: Subtract.

a) $89 - 27$ b) $77 - 28$ c) $98 - 38$ d) $64 - 59$

e) $76 - 38$ f) $83 - 41$ g) $96 - 69$ h) $445 - 223$

Answers: a) 62, b) 49, c) 60, d) 5, e) 38, f) 42, g) 27, h) 222

Multiplication and Division

Skill 27: Dividing within 10×10 by thinking of related multiplication

To solve $54 \div 9$, think "What number do I multiply 9 by to get 54?"

Exercises: What is the related multiplication? Divide.

a) $56 \div 8$ b) $63 \div 9$ c) $72 \div 8$ d) $42 \div 7$

e) $48 \div 6$ f) $64 \div 8$ g) $81 \div 9$ h) $49 \div 7$

Answers: a) 7, b) 7, c) 9, d) 6, e) 8, f) 8, g) 9, h) 7

Skill 28: Multiplying multiples of 10 and 100 by a one-digit number

Multiplication can mean grouping.

Example: 3×2 is 3 groups of 2 objects.

3×2 

Objects can be anything, including tens and hundreds.

3×20
$= 3 \times 2$ tens
$= 6$ tens
$= 60$

4×600
$= 4 \times 6$ hundreds
$= 24$ hundreds
$= 2$ thousands 4 hundreds
$= 2400$

Exercises: Multiply.

a) 5×80 b) 6×900 c) 7×800 d) 4×70

e) 8×600 f) 6×80 g) 8×90 h) 9×700

Answers: a) 400, b) 5400, c) 5600, d) 280, e) 4800, f) 480, g) 720, h) 6300

Skill 29: Dividing multiples of 10 and 100 by a one-digit number

Examples

$630 = 63$ tens	$3500 = 35$ hundreds
$630 \div 7$	$3500 \div 5$
$= 63$ tens $\div 7$	$= 35$ hundreds $\div 5$
$= 9$ tens	$= 7$ hundreds
$= 90$	$= 700$

Exercises: Divide.

a) $450 \div 5$ b) $5400 \div 9$ c) $5600 \div 7$ d) $630 \div 9$

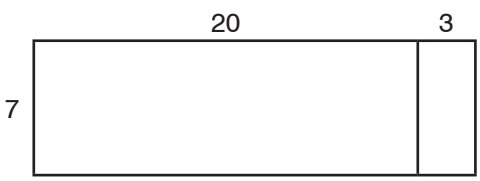
e) $6400 \div 8$ f) $720 \div 9$ g) $4200 \div 6$ h) $480 \div 8$

Answers: a) 90, b) 600, c) 800, d) 70, e) 800, f) 80, g) 700, h) 60

Skill 30: Multiplying a one-digit number by a two-digit number using the distributive law

You can multiply a one-digit number by a two-digit number by splitting the two-digit number into tens and ones and using easier products.

Example



7×23
$= 7 \times (20 + 3)$
$= 7 \times 20 + 7 \times 3$
$= 140 + 21$
$= 161$

How does the model show how to multiply? (find the area of a rectangle by dividing it into two parts)

Exercises: Multiply.

a) 3×25 b) 4×23 c) 6×31 d) 7×32

e) 8×56 f) 9×22 g) 4×58 h) 5×67

Answers: a) 75, b) 92, c) 186, d) 224, e) 448, f) 198, g) 232, h) 335

Mental Math Skills Checklist

Student name	Skill														
	Multiplication Basics				Addition and Subtraction										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Mental Math Skills Checklist

Student name	Skill														
	Multiplication—Distributive Law							Subtraction Skills				Multiplication and Division			
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Letter to Parents/Guardians

What is JUMP Math?

JUMP Math is an innovative, research-informed math resource and teaching approach used by schools to foster a deep understanding and love of math in their students. Our approach is based on the belief that all children can excel at math and, through early and continued success, can develop the confidence and cognitive abilities required to do well in all subjects.

JUMP Math has produced significant improvements in student achievement in a number of studies (including a randomized controlled trial). It is based on a method called structured inquiry. Each lesson is thorough and rigorous, and comes with instructional supports, exercises, assessments, activities, and extension questions that allow students to develop a deeper knowledge by working on incremental variations on the same topic. This allows teachers to focus their time and energy on real-time instruction and differentiation, rather than piecing lessons together from a variety of sources.

What are the components of JUMP Math?

The lesson plans are the heart of JUMP Math. Developed by a team of mathematicians and educators, it shows teachers how to:

- break concepts into fundamental units of understanding,
- assess and address gaps in student knowledge,
- present concepts in different ways and from different perspectives,
- build excitement with incrementally harder challenges, and
- foster advanced problem-solving skills.

Used in tandem with the student Assessment & Practice Books (AP Books), our Teacher Resource is aligned to provincial curricula.

How does JUMP Math benefit my child?

With JUMP Math, students derive concepts and solve problems themselves, and teachers provide guidance along the way to ensure this happens for all students, not just the advanced few. This approach ensures a critical balance of teaching and practice, and allows for varied forms of engagement, incremental challenge, and continuous assessment. At the end of each lesson, students work in their AP Books. These exercises match the material taught in the lesson exactly, allowing students to work independently to consolidate newly learned skills and concepts. At the same time, teachers get an immediate sense of where each student is and can provide individualized support as needed.

How can I support my child at home?

It's important that children understand how you use math every day: to compare prices and calculate change, measure ingredients in a recipe, estimate how much gas to buy, and predict if it will rain. Talk with them about this, and use coins, dice, cards, or dominoes to increase basic numeracy skills, pattern recognition, and fluency with math facts. Most importantly, believe in your child's potential to learn and become a mathematical thinker. If family members say "I don't have a math brain" or "I was always bad at math," your child gets the impression that math is scary and hard. Instead, use the language of possibility: "You don't have it yet but you will!"

To learn more, speak to your child's teacher or visit www.jumpmath.org.