



MATHMATICS

5 Grade Elite Stream, Abu Dhabi

STUDY REVIEW

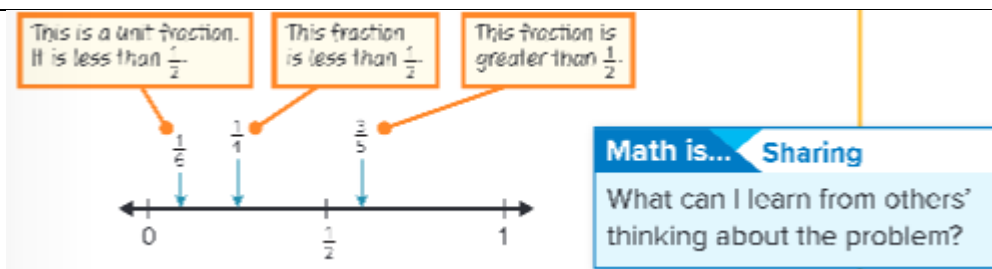
Term 1, Academic Year 2021/2022

Units	Learning Outcomes
Unit 1	Doing math in our everyday life.
Unit 2	Finding the volume of rectangular prisms.
Unit 3	Extending the knowledge of place value to understand decimals.
Unit 4	Adding and subtracting decimals.
Unit 5	Multiplying multi-digit whole numbers.
Unit 6	Using strategies to multiply decimals.



Unit 1: Math Is...

Textbook Pages	Pages 1-30
Vocabulary	Equations, patterns, problem-solving, partial sums, product, difference, estimate, quotient, equivalent/equal
Helpful Tips	Be prepared to write , explain or describe for your answers. Practice writing 1-2 sentences explaining your answers to various math problems.
Video Links	https://www.youtube.com/watch?v=64643Op6WJo
Lesson 1: Mindset Pg4-5	Describe how you use math in everyday life. Sample Answer: <i>I use math in my everyday life when.... I go to the store and buy things; when I go to the store and weigh fruits and vegetables. When I tell time or when I play sports.</i>
Lesson 2: Exploring & Thinking Pg 8-9	What do you know? Ahmed has 21 AED in his pocket. What are the possible combinations of money, bills and coins he may have? What are the bills he may have? What are the coins he may have? <i>Possible Answer: He may have 2 tens and 1 coin OR 1 ten 2 fives and 1 coin.</i>
Lesson 3: Math is My World Pg. 12-13	When we do math, we make models to help us think about math we need to solve the problem. <i>I can use fraction models to help me find equivalent fractions.</i> <i>Math is... Choosing Tools How can I use this tool to help me solve the problem?</i>
Lesson 4: Explaining & Sharing Pg 16-17	How can I justify my thinking? I can use math to solve problems but I must explain why. Salwa has 2 fractions on her paper. $\frac{1}{2}$ and $\frac{1}{3}$ what tools can she use to determine which fraction is bigger. <i>Answer: Pictorials help us determine reasonable answers. Math algorithms help to solve the puzzle and check our work.</i> Sample: Use pictures to explain your answer OR Use Math Methods OR Use a Number Line to Represent Fractions



Lesson 5: Finding Patterns

Pg 20-21

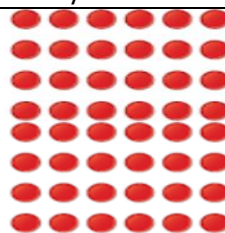
When we use patterns we solve equations more quickly and efficiently.

Ex. Solve $4 \times 12 =$

Skip Counting

4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48,

Arrays



Tables

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Lesson 6: Math is Ours

Pg 24-25

When we do Math, we solve our own problems.

What is the first thing you can do to solve a difficult problem you don't understand?

Answers Vary : Teachers use different Problem solving strategies to help solve Math Problems.



Practice Questions

Unit 1 QUIZ: Math Is...

Question #1

Where do you use Math in your everyday life?

- a. At home
- b. In school



	<div><div></div><div>c. Neighborhood</div><div>d. All of the above</div></div>												
Question #2	<div>Laila has a total of 26.00 AED in her account. What is the possible combination of bills and coins she can receive from the bank when she takes her money out?</div> <div><div>A. 3 tens and 2 coins</div><div>B. 2 tens , 1 five, 6 coins</div><div>C. 1 twenty, 1 five and 1 coin</div><div>D. 2 tens, 1 five , 50 fills</div></div> <div>Explain: How would you solve this problem?</div>												
Question #3	<div><table><tr><th>Color</th><th>Tally Marks</th><th>Totals</th></tr><tr><td>Purple</td><td><div><div></div><div></div><div></div><div></div><div></div></div></td><td>8</td></tr><tr><td>Blue</td><td><div><div></div><div></div><div></div><div></div><div></div></div></td><td>6</td></tr><tr><td>Yellow</td><td><div><div></div><div></div></div></td><td>2</td></tr></table><div>What is the least favorite color? _____</div></div>	Color	Tally Marks	Totals	Purple	<div><div></div><div></div><div></div><div></div><div></div></div>	8	Blue	<div><div></div><div></div><div></div><div></div><div></div></div>	6	Yellow	<div><div></div><div></div></div>	2
Color	Tally Marks	Totals											
Purple	<div><div></div><div></div><div></div><div></div><div></div></div>	8											
Blue	<div><div></div><div></div><div></div><div></div><div></div></div>	6											
Yellow	<div><div></div><div></div></div>	2											
Question #4	<div>Amy colored $\frac{1}{8}$ of the grid red, $\frac{1}{2}$ yellow, and $\frac{3}{8}$ green. What does her grid look like?</div> <div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div> <div>What are the best tools to use to solve this problem?</div> <div></div> <div></div>												
Question #5	<div>A classmate argues that $\frac{1}{4}$ one fourth is less than three tenths $\frac{3}{10}$ because 4 is less than 10 and 1 is less than 3. Do you agree with your classmate? What is the best argument you can make to your classmate?</div> <div><div>a. Yes I agree because 1 is less than 3.</div><div>b. No, I disagree because you can't divide 10 by 4.</div><div>c. Yes, but I used the Butterfly Method to prove which fraction is more.</div><div>d. No, I disagree because I used the pictures to compare the two fractions.</div></div> <div>How can you prove your answer?</div>												

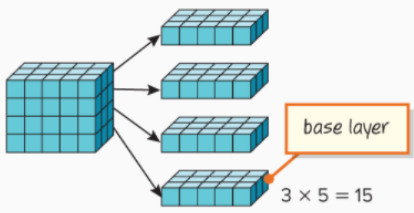
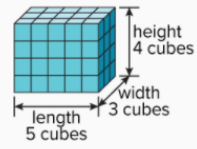
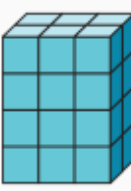


Question #6	<p>How are these equations related?</p> $\begin{array}{cccc} 8 \times 9 = ? & 7 \times 15 = ? & 9 \times 6 = ? & 5 \times 8 = ? \\ 8 \times 18 = ? & 7 \times 30 = ? & 9 \times 12 = ? & 5 \times 16 = ? \\ 8 \times 36 = ? & 7 \times 60 = ? & 9 \times 24 = ? & 5 \times 32 = ? \end{array}$ <p>a. The products are all multiples of 8. b. The products are all the same. c. The second factor doubles therefore the product doubled. d. The first factor are all equal.</p>
Question#7	<p>Question #6</p> <p>How can you extend the patterns in Question 6?</p>
Question #8	<p>Use partial sums to find the sum.</p> $\begin{array}{r} 538 \\ + 275 \\ \hline \square \quad (500 + 200) \\ \square \quad (30 + 70) \\ + \square \quad (8 + 5) \\ \hline \square \end{array}$
Question #9	$\begin{array}{cccc} 4 \times 8 = ? & 3 \times 15 = ? & 6 \times 4 = ? & 5 \times 8 = ? \\ 4 \times 16 = ? & 3 \times 30 = ? & 12 \times 4 = ? & 5 \times 16 = ? \\ 8 \times 16 = ? & 6 \times 30 = ? & 6 \times 8 = ? & 10 \times 8 = ? \end{array}$ <p>How are these equations related?</p> <p>A. There is no pattern B. The products are doubles of the first fact. C. The factors are all 3 or 4 D. The factors are multiples of 6.</p>
Question #10	<p>Ayesha is thinking of a fraction between $1\frac{3}{4}$ and $1\frac{1}{2}$. What is the fraction she could be thinking of?</p> <p>What is the best way to solve this problem?</p> <p>a. Add the fractions together. b. Make a number line and find all the fractions between the two. c. Draw a picture of $1\frac{3}{4}$ d. Subtract the fractions and then decide.</p> <p>Defend your answer. Explain why you chose this answer.</p>
Answer Key	<p>1. D 2. C 3. Yellow</p>

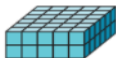




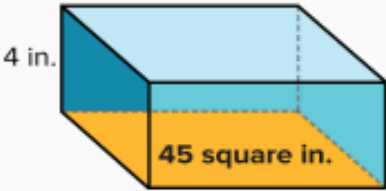
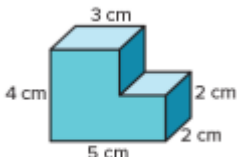


4. Answers May Vary
5. C
6. C
7. Answers May Vary: Double the factors
8. $700, 100, 13 = 813$
9. B
10. B ; Answers May Vary

Unit 2: Volume

Textbook Pages	31 to 60
Vocabulary	Rectangular prism, unit cube, volume, cubic unit, formula, composite solid figures
Helpful Tips	<p>One Way Multiply to find the number of cubes in one layer. Then, multiply by the number of layers.</p>  <p>Volume = Base \times height Formula: $V = B \times h$ $V = 15 \times 4$ $V = 60$ cubic units</p> <p>A formula is a rule that uses math symbols.</p> <p>Another Way Multiply the three attributes.</p>  <p>Volume = length \times width \times height Formula: $V = l \times w \times h$ $V = 5 \times 3 \times 4$ $V = 60$ cubic units</p>
Video Links	https://www.youtube.com/watch?v=BAa0N9vvD0s
Question #1	<p>Determine the volume of the figure.</p>  <p>Number of layers: <input type="text"/></p> <p>Number in each layer: <input type="text"/></p> <p>Volume: <input type="text"/> cubic units</p>

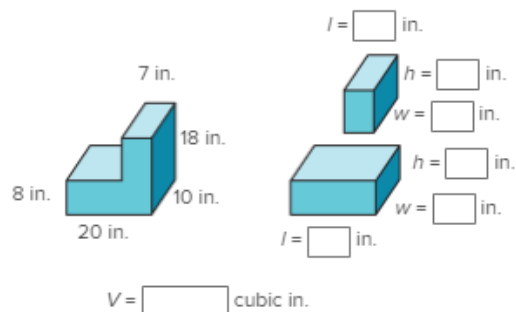


<p>Question #2</p>	<p>Which rectangular prisms have a volume of 36 cubic units?</p> <div style="display: flex; flex-direction: column; align-items: center;"> <div><input type="checkbox"/> </div> <div><input type="checkbox"/> </div> <div><input type="checkbox"/> </div> <div><input type="checkbox"/> </div> <div><input type="checkbox"/> </div> </div>
<p>Question #3</p>	<p>A sign company made this letter using rectangular prisms. Each prism is 12 inches by 4 inches by 4 inches. What is the volume of the letter?</p>
<p>Question #4</p>	<p>What is the volume of the figure? Tell which volume formula you used and why.</p> <div style="text-align: center;">  </div>
<p>Question #5</p>	<p>A cargo container has a volume of 108 cubic meters, a height of 3 meters, and a width of 2 meters. How long is the cargo container?</p>
<p>Question #6</p>	<p>Draw line(s) to show how you decomposed the figure. What is the volume of the figure?</p> <div style="text-align: center;">  <p>$V = \underline{\hspace{2cm}}$</p> </div>



Question #7

Label the unknown dimensions of the decomposed figure and then find the volume of the composite solid figure.



Question #8

Which equation represents the different ways to find the volume of these figures?

Prism A:



Prism B:



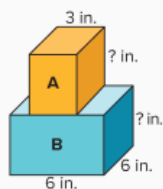
- ☐ $(4 \times 3) \times 2 = 4 \times (3 \times 2)$
- ☐ $(3 \times 4) \times 2 = (4 \times 3) + 2$
- ☐ $3 \times (4 \times 2) = (3 \times 4) \times (3 \times 2)$
- ☐ $3 \times (4 + 2) = (3 \times 4) + (3 \times 2)$

Question #9

Lisa is building a rectangular planter that is 2 feet wide, 4 feet long, and 1 foot high. She has 3 cubic feet of soil. How much more soil does she need to fill the planter?

Question #10

The combined volume of the two boxes shown is 270 cubic inches. Box A and Box B have the same width and height. Box B has twice the volume of Box A.



Determine the height and volume of each box.

	Height (in.)	Volume (cubic in.)
Box A	<input type="text"/>	<input type="text"/>
Box B	<input type="text"/>	<input type="text"/>

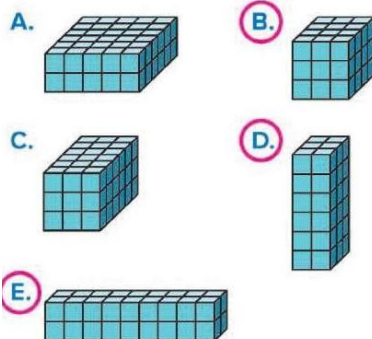
Answer Key

#1: Number of layers: 4

Number in each layer: 6

Volume: 24 cubic units

Which rectangular prisms have a volume of 36 cubic units? Select all that apply. (Lesson 2–3)

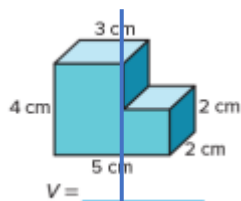


#2:

#3: 192 inches squared

#4: 180 inches squared

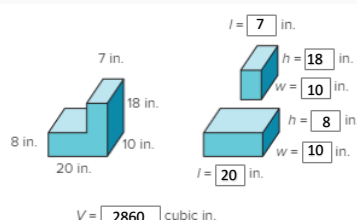
#5: Length = 18 meters



#6:

$$V = 32 \text{ cm}^2$$

Label the unknown dimensions of the decomposed figure and then find the volume of the composite solid figure.

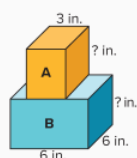


#7:

#8: ☐ $(4 \times 3) \times 2 = 4 \times (3 \times 2)$

#9: 5 feet of soil

The combined volume of the two boxes shown is 270 cubic inches. Box A and Box B have the same width and height. Box B has twice the volume of Box A.



Determine the height and volume of each box.

	Height (in.)	Volume (cubic in.)
Box A	5	90
Box B	5	180

#10:



Unit 3: Place Value and Number Relationships	
Textbook Pages	Pages 61-90
Vocabulary	Digit, Place value, Place value chart, Decimal, Decimal point, Tenth, Hundredth, Thousandth, Expanded form, Standard form, Word form, greater than (>), less than (<), Round, Estimate.
Helpful Tips	Be prepared to write, explain or describe for your answers. Practice writing 1-2 sentences explaining your answers to various math problems.
Video Links	Place value with decimals: https://www.youtube.com/watch?v=wtrrr15mbvQ Compare decimals: https://www.youtube.com/watch?v=nhLZcvfdggs Read and write decimals: https://www.youtube.com/watch?v=j_bvsZ9Tt38 Round decimals: https://www.youtube.com/watch?v=xJIBA2L_ihE
Practice Questions	Unit 3 QUIZ
Question #1	Which of the following statements is true? A. 0.005 is 1/10 of 0.5 B. 0.05 is 1/10 of 0.005 C. 0.5 is ten times 0.005 D. 0.05 is ten times 0.005
Question #2	For which number is the value of the digit 6 is ten times the value of 6 in the number 2.965? E. 1.063 F. 4.617 G. 5.326 H. 6.05
Question #3	What is the Standard form of $90+5+0.1+0.007 =$ _____
Question #4	What is the expanded form of the decimal 37.86? A. $30+7+0.08+0.06$ B. $30+7+0.08+0.006$ C. $30+7+0.8+0.06$ D. $30+7+0.08+0.006$
Question #5	Write >, < or = to make a true comparison 6.690 ___ 7.3
Question #6	What is the word form of the decimal 4.76? _____
Question #7	What is the standard form of six hundred thirty-two and seventeen thousandths? _____



Question #8	Use the digits 4, 3, 9,6 to create the greatest possible decimal number <div><div></div><div></div><div></div><div></div><div></div></div>
Question #9	Round the Decimal 9.765 to the nearest tenth? E. 10.0 F. 9.8 G. 9.77 H. 9.6
Question #10	Round the Decimal 345.523 to the nearest hundredth? A. 300 B. 345.53 C. 345.5 D. 345.520
Question #11	Round the Decimal 57.29 to the nearest whole number? A. 58 B. 57.2 C. 57 D. 56
Question #12	Fatima rounded a number to the nearest to get 20.6. what number could she have rounded? _____
Answer Key	11. D 12. B 13. 95.107 14. C 15. < 16. Four and seventy-six hundredths 17. 632.017 18. 964.3 19. B 20. D 21. C 22. Possible answers: 20.61, 20.62, 20.63, 20.64,20.55, 20.56, 20.57, 20.58, 20.59.

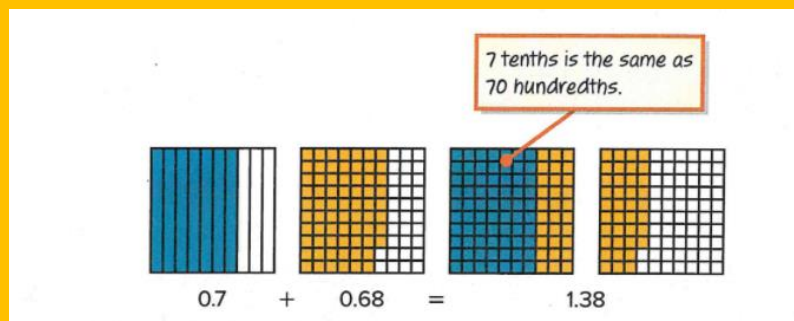


Unit 4: Add and subtract decimals

Textbook page	93 - 126
Unit vocabulary	Decimal, estimate, round off, decompose, partial sums
<p>Lesson 4.1</p> <p>Estimate sum and differences of Decimals</p> <p>Page 93 - 96</p>	<div> <p>Review</p> <p>When estimating sums and differences of decimals, you can round each decimal number to the nearest whole number.</p> <p>$14.61 + 12.29 = ?$</p> <p>Round each of the decimal numbers.</p> <p>$14.\underline{6}1 \rightarrow$ rounds up $\rightarrow 15$ since 6 is greater than 5</p> <p>$12.\underline{2}9 \rightarrow$ rounds down $\rightarrow 12$ since 2 is less than 5</p> <p>Now add the whole numbers.</p> <p>$15 + 12 = 27$</p> <p>$14.61 + 12.29$ is about 27.</p> </div> <div> <p>Rounding to the nearest whole number means the new number will not be a decimal number.</p> </div>
Resource	Video: https://www.youtube.com/watch?v=2-3zGGVKRXc
<p>Lesson 4.2</p> <p>Represent addition of decimals</p> <p>Page 99 - 102</p>	<p>Example: Meera walks 0.2 miles to the bookstore and then 0.3 miles to the park. How many miles did she walk altogether ?</p> <div> <p>0.2 + 0.3 = 0.5</p> <p>Decimal grids can help you solve the equation.</p> </div> <p>How can you determine the sum of 0.7 and 0.68?</p> <ul style="list-style-type: none"> First write 7 tenths as hundredths
<p>Lesson 4.3</p> <p>Represent Addition of Tenths and hundredths</p>	



Page 103 - 106



Resource

Video : <https://www.youtube.com/watch?v=alrb6dwMJ3E>

Lesson 4.4

Strategies to add decimals

When adding decimals we can use Partial sums

Page 107 -110

► **One Way** Decompose by place value.

$$17.31 + 12.45 = c$$

$$10 + 7 + 0.3 + 0.01 \quad 10 + 2 + 0.4 + 0.05$$

$$10 + 10 = 20$$

$$7 + 2 = 9$$

$$0.3 + 0.4 = 0.7$$

$$0.01 + 0.05 = 0.06$$

Find partial sums

$$20 + 9 + 0.7 + 0.06 = 29.76$$

Add partial sums to find the sum

► **Another Way** Decompose into whole numbers and decimals.

$$17.31 + 12.45 = c$$

$$17 + 0.31 \quad 12 + 0.45$$

$$17 + 12 = 29$$

$$0.31 + 0.45 = 0.76$$

Find partial sums

$$29 + 0.76 = 29.76$$

Add partial sums to find the sum

Lesson 4.5

Represent subtraction of decimals

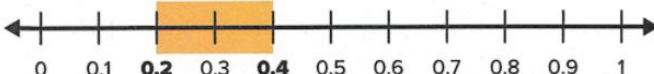
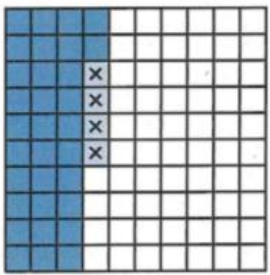
The table shows the decimals represented by different colours on a decimal grid

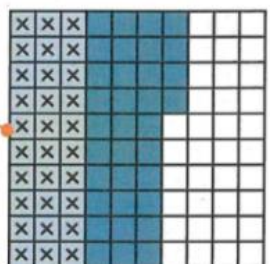
Color	Decimal
Red	0.4
Green	0.2
Yellow	0.36
Purple	0.04

Page 111- 114

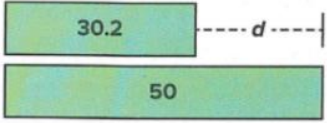
A. Determine how much more is shaded red than green?



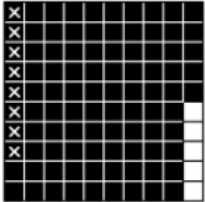
	<p>Use a number line to find how much more is shaded red than green.</p> $0.4 - 0.2 = r$  <p>There is 0.2 more shaded red than green.</p>
	<p>B . Use a decimal grid to determine how much more is shaded yellow than purple</p> $0.36 - 0.04 = y$  <p>There is 0.32 more shaded yellow than purple.</p>

<p>Lesson 4.6</p> <p>Represent Subtraction of Tenths and Hundredths</p> <p>Page 116 - 118</p>	<p>Example: Determine $0.64 - 0.3$</p> <p>Remember to change 3 tenths to hundredths</p> <div><div>0.3 is the same as 0.30.</div></div> $0.64 - 0.30 = 0.34$
Resource	https://www.youtube.com/watch?v=vjxjizwR_yU

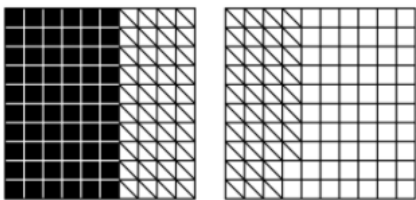


<p>Lesson 4.7</p> <p>Strategies to subtract decimals</p> <p>Page 120 -122</p>	<div> <p>Review</p> <p>Use partial differences to find the difference.</p> $36.2 - 4.98 = ?$ <p>Decompose 4.98 by place value and subtract.</p> $36.2 - 4 = 32.2$ $32.2 - 0.9 = 31.3$ $31.3 - 0.08 = 31.22$ $36.2 - 4.98 = 31.22$ </div>
<p>Lesson 4.8</p> <p>Explain strategies to add and subtract decimals</p> <p>Page 124 - 126</p>	<p>Example: Use different strategies to solve</p> <p>Shouq is participating in a 50 km cycling race. She stops to drink some water after 30.2 km. How much further does Shouq have to cycle?</p> <div> <div> <p>You can use a bar diagram to represent the problem.</p>  </div> <div> <p>You can write a subtraction equation or an addition equation with unknown addend to solve.</p> $50 - 30.2 = d \quad 30.2 + d = 50$ </div> </div> <p>You can use different strategies to solve.</p> <p>Decompose by place value. Count on to subtract.</p> $50 - 30 = 20$ $20 - 0.2 = 19.8$ $d = 19.8$ $30.2 + 0.8 = 31$ $31 + 9 = 40$ $40 + 10 = 50$ $d = 19.8$
<p>Unit 4 Quiz</p>	<p>Practice Questions</p>
<p>Question #1</p>	<p>Where Robert lives, the average high temperature in July is 87.4°F. The average low temperature in July is 64.8°F. Which equation best estimates the difference between the average high and low temperatures in July?</p> <p>A. $87 - 65 = 22$</p> <p>B. $88 - 64 = 24$</p> <p>C. $88 - 65 = 23$</p> <p>D. $87 - 64 = 23$</p>



Question #2	At a long jump event Rashid jumps first jump was 6.2 meters. His second jump was 5.9 meters. His first jump was _____ meters longer than his second jump.
Question #3	<p>What equation is shown by the decimal grid</p>  <p>A. $1 - 0.05 = 0.95$ B. $0.95 - 0.08 = 0.87$ C. $0.95 - 0.8 = 0.87$ D. $0.87 - 0.08 = 0.79$</p>
Question #4	<p>Which of the following is a correct way to find $35.76 + 14.53$? Choose all that apply.</p> <p>A. $3 + 1 + 5 + 4 + 7 + 5 + 6 + 3$ B. $3 + 1 + 5 + 4 + 0.7 + 0.5 + 0.6 + 0.3$ C. $30 + 10 + 5 + 4 + 0.7 + 0.5 + 0.06 + 0.03$ D. $35 + 14 + 0.76 + 0.53$</p>
Question #5	Hana makes 2.4 liters of iced tea. After serving the iced tea to her friends she has 0.29 liters of iced tea left. Hana served _____ liters of iced tea to her friends
Question #6	<p>Jenny has a recipe that calls for 0.84 cup of milk and 0.6 cup of chicken broth. How many cups of liquid does Jenny need for the recipe?</p> <p>A. 0.24 cup B. 0.82 cup C. 0.9 cup D. 1.44 cups</p>
Question #7	Malak has Aed 0.85. She bought a pencil for Aed 0.50. Does she have enough money to buy a ruler for Aed 0.30? Defend your answer.
Question #8	The science club had a cupcake sale to raise money to clean the beach. They spent Aed 29.75 on trash bags and Aed 74.75 on rubber gloves. They still had Aed 47 left over. How much



	money did they raise? _____
Question #9	<p>What equation is represented by the decimal grids?</p>  <p>0.6 + _____ = _____</p>
Question #10	<p>Salama and her father caught two fish. The first fish weighs 3.5 kilogram. The second fish weighs 0.42 kilograms less than the first fish. The combined weight of the two fish is _____ kilograms</p>
Answer Key	<ol style="list-style-type: none"> A 0.3 B C and D 2.11 D Yes. She will have Aed 0.35 left. This will be enough to buy the ruler Aed 151.50 $0.6 + 0.78 = 1.38$ Second fish ($3.5 - 0.42 = 3.08$) . Total weight : $3.5 + 3.08 = 6.58$ kilograms

Unit 5: Multiply Multi-Digit Whole Numbers

Textbook Pages	Pages 135-170
Vocabulary	decimal grid, tenths, hundredths, decompose, strategy, procedure, partial sums, evaluate, expression, exponent, powers, estimate, about, area models
Helpful Tips	<p>Write, Explain and Describe Answers.</p> <p>Go Back to Your Textbook if You Cannot Complete a Problem or Solve Incorrectly.</p> <p>When You See the Words “Estimate, About, Approximately”, Don’t Forget to Round Off.</p> <p>Remember the Turtle Head Method.</p>



Review

You can use a base and an exponent to find and represent powers of 10.

Find 10^5 .

In the expression 10^5 , 10 is the *base* and 5 is the *exponent*.
Exponents represent how many times the base is used as a *factor*.

$$10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100,000$$

Represent $10 \times 10 \times 10$ in *exponential form*, using a *base* and an *exponent*.

Since 10 is the repeated factor, and it is being used as a factor 3 times, 10 will be the base and 3 will be the exponent. Write the expression in exponential form.

$$10 \times 10 \times 10 = 10^3$$

Review

The product of multiplying 10 by itself a number of times is called a power of 10.

$$\begin{aligned} 10^4 &= \underbrace{10 \times 10 \times 10 \times 10}_{4 \text{ times}} \\ &= 10,000 \end{aligned}$$

10^4 would be a 10 with 4 zeros after the one.

Review

You can use a pattern to multiply whole numbers by powers of 10.

A company is purchasing pens. There are 16 pens in a pack, and the company purchases 1,000 packs. How many pens does the company purchase?

When multiplying a number by a power of 10, the product becomes 10 times greater for each power of 10.

$$16 \times 10^1 = 8 \times 10 = 160$$

$$16 \times 10^2 = 8 \times 100 = 1,600$$

$$16 \times 10^3 = 8 \times 1,000 = 16,000$$

The company purchases 16,000 pens.



Review

Use the pattern in the number of zeros in the product when multiplying a whole number by a power of 10.

$$\begin{aligned} 36 \times 10^4 &= 36 \times 10 \times 10 \times 10 \times 10 \\ &= 360 \times 10 \times 10 \times 10 \\ &= 3,600 \times 10 \times 10 \\ &= 36,000 \times 10 \\ &= 360,000 \end{aligned}$$

So, 36×10^4 is equivalent to 36 with four 0s, or 360,000.

Review

You can use rounding or compatible numbers to estimate a product.

There are 329 students in a grade school. Each student donates 11 canned goods. About how many canned goods does the school collect?

$$\begin{array}{rcl} 329 & \times & 11 = c \\ \downarrow & & \downarrow \\ 330 & \times & 10 = 3,300 \end{array} \quad \begin{array}{l} 329 \text{ rounds to } 330. \\ 11 \text{ rounds to } 10. \end{array}$$

A reasonable estimate is that the school collected 3,300 canned goods.

Review

You can multiply with multiples of 10 to help when estimating products of multi-digit factors.

$$\begin{aligned} \text{Estimate the product } 52 \times 303. \\ 50 \times 300 &= 5 \times 10 \times 3 \times 100 \\ &= 5 \times 3 \times 10^3 \\ &= 15 \times 10^3 \\ &= 15,000 \end{aligned}$$



Review

You can use area models and partial products to decompose factors and find products.

A parking lot is 248 feet long and 56 feet wide. What is the area of the parking lot?

To find the area, solve 56×248 . Use an area model.

	200	+	40	+	8
50	10,000		2,000		400
+					
6	1,200		240		48

Add the partial products to find the product.

$$10,000 + 2,000 + 400 + 1,200 + 240 + 48 = 13,888$$

The area of the parking lot is 13,888 square feet.

Review

Decompose the factors by place value and set up your area model. Multiply to find the partial products. Add to find the product.

$$17 \times 385 = (10 + 7) \times (300 + 80 + 5)$$

	300	80	5
10	$10 \times 300 =$ 3,000	$10 \times 80 =$ 800	$10 \times 5 =$ 50
7	$7 \times 300 =$ 2,100	$7 \times 80 =$ 560	$7 \times 5 =$ 35

$$17 \times 385 = 3,000 + 2,100 + 800 + 560 + 50 + 35 = 6,545$$



Review

You can use partial products to find products of multi-digit factors.

Find 16×128 . Decompose the factors by place value. Then use partial products.

$$\begin{array}{r} 128 \\ \times 16 \\ \hline 10 \times 100 = 1,000 \\ 10 \times 20 = 200 \\ 10 \times 8 = 80 \\ 6 \times 100 = 600 \\ 6 \times 20 = 120 \\ 6 \times 8 = + 48 \\ \hline 2,048 \end{array}$$

← Add the partial products.

The product is 2,048.

Review

Decompose the factors by place value. Use this to help set up your partial products.

$$\begin{aligned} 17 \times 385 &= (10 + 7) \times (300 + 80 + 5) \\ &= 10 \times 300 + 10 \times 80 + 10 \times 5 + 7 \times 300 + 7 \times 80 + 7 \times 5 \\ &= 3,000 + 800 + 50 + 2,100 + 560 + 35 \\ &= 6,545 \end{aligned}$$

Review

You can use an algorithm to multiply a multi-digit factor and a single-digit factor.

Find the product $2,234 \times 6$. Use the standard algorithm for multiplication.

$$\begin{array}{r} \text{+1+2+2} \\ 2,234 \\ \times \quad 6 \\ \hline 13,404 \end{array}$$

The product is 13,404.



Review

Below is a way to combine the partial products with the algorithm.

$$\begin{array}{r} 983 \\ \times \quad 5 \\ \hline 15 \quad 3 \text{ and the } 5 \text{ are in the ones place. Multiply } 3 \times 5. \\ 400 \quad 8 \text{ is in the tens place. Multiply } 80 \times 5. \\ + 4,500 \quad 9 \text{ is in the hundreds place. Multiply } 900 \times 5. \\ \hline 4,915 \end{array}$$

Add 15, 400, and 4,500 for the product.

$$\begin{array}{r} 983 \\ \times \quad 5 \\ \hline 4,915 \end{array}$$

Here it is using the algorithm.

Review

You can use the standard algorithm to multiply 3-digit and 4-digit factors by a 2-digit factor.

Find $2,186 \times 42$ using the standard algorithm for multiplication.

$$\begin{array}{r} 2,186 \\ \times \quad 42 \\ \hline 4,372 \quad \text{Multiply } 2,186 \text{ by } 2. \\ + 87,440 \quad \text{Multiply } 2,186 \text{ by } 40. \\ \hline 91,812 \end{array}$$

Add the partial products.

The product is 91,812.

Review

Below is a way to multiply using partial products.

$$\begin{array}{r} 983 \\ \times \quad 37 \\ \hline 6,881 \quad \text{Multiply } 983 \times 7. \\ + 29,490 \quad \text{Multiply } 983 \times 30. \\ \hline 36,371 \end{array}$$

Add the partial products.

Video Links

Understand Powers and
Exponents <https://www.youtube.com/watch?v=W3IPO3LrVuE>



Patterns When Multiplying a Whole Number by Powers of 10 <https://www.youtube.com/watch?v=X0sbrxv8FdQ>
Estimate Products of Multi-Digit Factors <https://www.youtube.com/watch?v=9mc-9uLwyOI>
Use Area Models to Multiply Multi-Digit Factors <https://www.youtube.com/watch?v=MVZRD4Fa1OY>
Use Partial Products to Multiply Multi-Digit Factors <https://www.youtube.com/watch?v=0awKIZ7KbPM>
Relate Partial Products to an Algorithm <https://www.youtube.com/watch?v=AWuY-Qtfu8o>
Multiply Multi-Digit Factors Fluently <https://www.youtube.com/watch?v=ffB45jcXBHE>

Practice Questions

Unit 5 QUIZ

Question #1

Zayed used partial products to find the product of two numbers. The partial products are shown below.

$$\begin{array}{r} 30,000 \\ 1,800 \\ 480 \\ 2,000 \\ 120 \\ + 32 \\ \hline 34,432 \end{array}$$

Which of the following two numbers did he multiply?

- a. 58×638
- b. 54×648
- c. 64×648
- d. 64×538

Question #2

	700	+	20	+	5
40	28,000		800		200
+					
6	4,200		120		30

Which two numbers are multiplied in the area model shown below?



- a. $725 \times 46725 \times 46$
- b. $7025 \times 4067025 \times 406$
- c. $725 \times 406725 \times 406$
- d. $700205 \times 406700205 \times 406$

Question #3

Find the missing values for the product shown in the area model.

	300	+	40	+	☆
70	21,000		2,800		420
+					
4	△		160		◇

- a) $\Delta = 120$, $\star = 8$, $\Diamond = 20$
- b) $\Delta = 1,200$, $\star = 7$, $\Diamond = 42$
- c) $\Delta = 1,000$, $\star = 6$, $\Diamond = 12$
- d) $\Delta = 1,200$, $\star = 6$, $\Diamond = 24$

Question #4

The exponential form of 100,000,000 is

- a. $10^9 10^9$
- b. $10^8 10^8$
- c. $10^7 10^7$
- d. $10^6 10^6$

Question #5

Complete the equation with a power of 10.

$$180 \times \dots\dots\dots = 180,000 \quad 180 \times \dots\dots\dots = 180,000$$



	<p>a. $10^4 10^4$</p> <p>b. $10^3 10^3$</p> <p>c. $10^2 10^2$</p> <p>d. $10^6 10^6$</p>
Question #6	<p>One - day entry ticket to Expo 2020 DUBAI costs AED 95 per adult. If 98 adults plan to visit the Expo, about how much will the tickets cost? Choose the approximate cost as power of 10.</p> <p>a. $10^2 10^2$</p> <p>b. $10^3 10^3$</p> <p>c. $10^4 10^4$</p> <p>d. $10^5 10^5$</p>
Question#7	<p>Ahmed earns AED 384 each week at his part-time job. How much does he earn working for 4 weeks?</p> <p>a. AED 1536</p> <p>b. AED 3844</p> <p>c. AED 1356</p> <p>d. AED 828</p>
Question #8	<p>Choose the correct product of 865×24 using the standard algorithm for multiplication.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>a)</p> $\begin{array}{r} 865 \\ \times 24 \\ \hline 3460 \\ 1730 \\ \hline 20760 \end{array}$ </div> <div style="text-align: center;"> <p>b)</p> $\begin{array}{r} 865 \\ \times 24 \\ \hline 3460 \\ 17300 \\ \hline 20760 \end{array}$ </div> <div style="text-align: center;"> <p>c)</p> $\begin{array}{r} 865 \\ \times 24 \\ \hline 1730 \\ 34600 \\ \hline 20760 \end{array}$ </div> </div>
Question #9	<p>Write the $10^3 10^3$ as product of 10.</p> <p>a. $10 \times 10 \times 10 \times 10$</p> <p>b. $10 \times 10 \times 10$</p> <p>c. 10×10</p> <p>d. 10101010</p>



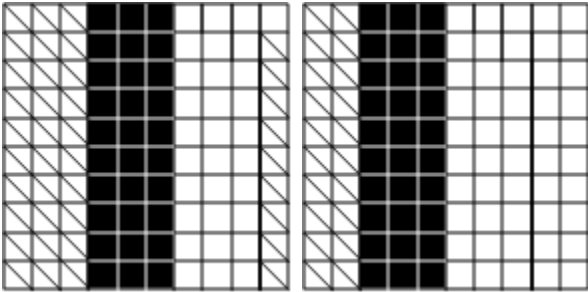
Answer Key

1. d
2. a
3. d
4. b
5. b
6. c
7. a
8. b
9. b
10. d

Unit 6 (Lessons 1,2,3): Multiply Decimals

Textbook Pages	171
Question #1 / 2	Write the multiplication using factors of 10. Then find the value. <div style="display: flex; justify-content: space-around;"> <div>1. 1.8×10^3</div> <div>2. 6.4×10^2</div> </div>
Question #3 / 4	Use patterns to help you find the value of each expression. <div style="display: flex; justify-content: space-around;"> <div> 3. $5.2 \times 10_3 =$ $5.2 \times 10_4 =$ </div> <div> 4. $9.7 \times 10_2 =$ $9.7 \times 10_3 =$ $9.7 \times 10_1 =$ </div> </div>
Question #5	Rosa hiked $1.3 \times 10_3$ meters before stopping for a water break. Alvin hiked $9.4 \times 10_2$ meters before stopping for water. Who hiked farther before stopping? How do you know?
Question #6	Kenji is running in a 10K race. The course covers a total distance of $1 \times 10_4$ meters. After one hour, Kenji has run $3.2 \times 10_3$ meters. How much farther does Kenji have to run to complete the race? Write the answer in standard form and as a decimal multiplied by a power of 10.
Question #7 / 8	Estimate each product by rounding. Show your work.



	<p>7. 4.18×6.86</p> <p>8. 2.73×5.17</p>
Question #9	Find a range of reasonable estimates for the product 7.34×4.78 . Explain how you found the range.
Question #10	Evelyn has \$30 to spend on lunch meat for a family picnic. The lunch meat costs \$5.79 per pound. She estimates that she will need 7.25 pounds. Does she have enough money to buy all the lunch meat she needs? Explain how you know.
Question #11	Write an equation and use a decimal grid to help you solve. Abbey uses 0.14 gallon of water to fill a container. She fills the container 6 times throughout the day. How many gallons of water does Abbey use in all?
Question #12/13	Complete each equation. 12. $0.16 \times 6 = \underline{\hspace{1cm}}$ 13. $0.1 \times 0.9 = \underline{\hspace{1cm}}$
Question #14	Jade buys 6 packets of seeds. Each seed packet costs \$0.30. She uses the representation below to find the total cost. Is her representation correct? Explain. What is Jade's total cost? 
Answer Key	<p>1. $1.8 \times 10 \times 10 \times 10 = 1,800$</p> <p>2. $6.4 \times 10 \times 10 = 640$</p>



3. 5,200 and 52,000
4. 970; 9,700; and 97
5. Rosa: Rosa hiked 1,300 meters and Alvin hiked 940 meters, and $1,300 > 940$
6. 6,800 meters; 6.8×103 meters
7. $4 \times 7 = 28$; about 28

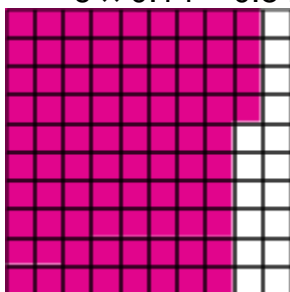
8. $3 \times 5 = 15$; about 15

9. between 28 and 40; Since 7.34 is between 7 and 8 and 4.78 is between 4 and 5, the product lies in the range given by $7 \times 4 = 28$ and $8 \times 5 = 40$

10. No; Since 5.79 is between 5 and 6 and 7.25 is between 7 and 8, the range of values for the exact cost is between 5×7 and 6×8 , or between \$35 and \$48. Since Evelyn has only \$30 to spend, she does not have enough money.

$11.6 \times 0.14 = g$

$6 \times 0.14 = 0.84$ Abbey uses 0.84 gallon of water.



12. 0.96

13. 0.09

14. Yes; \$1.80; She uses 6 groups of 3 tens rods to show 6×0.30 .