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Rounding & Estimation

1 Circle which of the two numbers you would add to the first number to get closest to the target number. Use rounding and estimation to help.

Target Number	First Number	Circle One Number	Show Your Work
ex 120	62	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-right: 10px;">73</div> 36 </div>	$60 + 70 = 130$ (73) $60 + 40 = 100$ (36)
a 170	47	153 108	
b 190	83	96 132	
c 230	89	118 172	

2 Use rounding and estimation to answer the questions below without doing all the calculations. Fill in one circle to answer each question.

a Regina is reading a book that is 386 pages long. She read 190 pages last week. If she reads 187 pages this week, will she finish the book?

- Yes. She will finish the book.
 No. She will not finish the book.

b Kiyoshi wants to buy a bike that costs \$230. He has \$80. His grandmother said she will give him \$100, and his neighbor said she will pay him \$32 to do some work in her garden. Will Kiyoshi have enough money to buy the bike?

- Yes. He will have enough money.
 No. He will not have enough money.

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Using Basic Facts to Solve Larger Problems

Knowing the basic multiplication and division facts can help you multiply larger numbers. Start with the basic facts below and then complete the related fact family of larger numbers. Then make up your own fact family based on other related numbers.

Basic Fact Family	Related Fact Family	Your Own Related Fact Family
example $\underline{4} \times \underline{3} = \underline{12}$ $3 \times 4 = 12$ $\underline{12} \div \underline{4} = \underline{3}$ $12 \div 3 = 4$	$40 \times 3 = 120$ $\underline{3} \times \underline{40} = \underline{120}$ $120 \div 40 = 3$ $\underline{120} \div \underline{3} = \underline{40}$	$\underline{40} \times \underline{30} = \underline{1,200}$ $\underline{30} \times \underline{40} = \underline{1,200}$ $\underline{1,200} \div \underline{40} = \underline{30}$ $\underline{1,200} \div \underline{30} = \underline{40}$
1 $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $6 \times 8 = 48$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $48 \div 6 = 8$	$80 \times 6 = 480$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $480 \div 80 = 6$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$	$\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$
2 $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $9 \times 4 = 36$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $36 \div 9 = 4$	$40 \times 9 = 360$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $360 \div 40 = 9$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$	$\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$
3 $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $7 \times 3 = 21$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $21 \div 7 = 3$	$30 \times 7 = 210$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $210 \div 30 = 7$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$	$\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \times \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$ $\underline{\quad} \div \underline{\quad} = \underline{\quad}$

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Multiplication Estimate & Check

1 Think about rounding to estimate the answers to the problems below. Then rewrite each problem vertically and solve it using the partial products method. Check your answer against your estimate to make sure that it is reasonable.

Problem	ex 63×21	a 42×37	b 73×26
Estimate	$60 \times 20 = 1,200$		
Solution	$\begin{array}{r} 63 \\ \times 21 \\ \hline 20 \times 60 = 1,200 \\ 20 \times 3 = 60 \\ 1 \times 60 = 60 \\ 1 \times 3 = + 3 \\ \hline 1,323 \end{array}$		
Problem	c 33×19	d 84×38	e 56×44
Estimate			
Solution			



CHALLENGE

2 Circle the two numbers whose product is 1,274

26

34

49

61

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Rounding & Division Practice

1 Complete each sentence below.

a If you want to round a number to the nearest ten, you need to look at the number in the _____ place.

b If you want to round a number to the nearest hundred, you need to look at the number in the _____ place.

2 Round each number first to the nearest ten and then to the nearest hundred.

Number	ex 382	a 437	b 264	c 578	d 843	e 235
Nearest Ten	380					
Nearest Hundred	400					

3 Complete the division problems.

$$12 \div 2 = \underline{\quad\quad} \quad 24 \div 6 = \underline{\quad\quad} \quad 18 \div 3 = \underline{\quad\quad} \quad 45 \div 5 = \underline{\quad\quad}$$

$$120 \div 2 = \underline{\quad\quad} \quad 240 \div 6 = \underline{\quad\quad} \quad 180 \div 3 = \underline{\quad\quad} \quad 450 \div 5 = \underline{\quad\quad}$$

4 Round and then divide to estimate each quotient.

Problem	Rounded	Estimated Quotient
ex $123 \div 2$	$120 \div 2 = 60$	$123 \div 2$ is about equal to <u>60</u> .
a $177 \div 3$		$177 \div 3$ is about equal to _____.
b $237 \div 6$		$237 \div 6$ is about equal to _____.
c $452 \div 5$		$452 \div 5$ is about equal to _____.

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Multiplication Problems & Mazes

1 Complete the multiplication problems below. Use problems you have already solved to help solve other ones.

<p>a $18 \times 2 =$ _____</p> <p>$18 \times 3 =$ _____</p> <p>$18 \times 10 =$ _____</p> <p>$18 \times 5 =$ _____</p>	<p>b $23 \times 2 =$ _____</p> <p>$23 \times 3 =$ _____</p> <p>$23 \times 10 =$ _____</p> <p>$23 \times 5 =$ _____</p>	<p>c $34 \times 2 =$ _____</p> <p>$34 \times 3 =$ _____</p> <p>$34 \times 10 =$ _____</p> <p>$34 \times 5 =$ _____</p>
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2 Use the problems above to write three more combinations for each number. Show as much work as you need to find each product.

<p>a</p> <p>$18 \times 13 = 180 + 54 = 234$</p> <p>$18 \times$ _____ $=$ _____</p> <p>$18 \times$ _____ $=$ _____</p>	<p>b</p> <p>$23 \times$ _____ $=$ _____</p> <p>$23 \times$ _____ $=$ _____</p> <p>$23 \times$ _____ $=$ _____</p>	<p>c</p> <p>$34 \times$ _____ $=$ _____</p> <p>$34 \times$ _____ $=$ _____</p> <p>$34 \times$ _____ $=$ _____</p>
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3 Use multiplication and division to find the secret path through each maze. The starting and ending points are marked for you. You can only move one space up, down, over, or diagonally each time. Write four equations to explain the path through the maze.

<p>ex</p> <table border="1" style="margin-left: 20px;"> <tr> <td></td> <td>20</td> <td>60</td> <td>3</td> </tr> <tr> <td>end</td> <td>3</td> <td>9</td> <td>180</td> </tr> <tr> <td>start</td> <td>36</td> <td>4</td> <td>20</td> </tr> </table> <p style="margin-left: 20px;"> $36 \div 4 = 9$ $9 \times 20 = 180$ $180 \div 3 = 60$ $60 \div 20 = 3$ </p>		20	60	3	end	3	9	180	start	36	4	20	<p>a</p> <table border="1" style="margin-left: 20px;"> <tr> <td></td> <td></td> <td colspan="2" style="text-align: center;">start</td> </tr> <tr> <td></td> <td>4</td> <td>60</td> <td>240</td> </tr> <tr> <td>end</td> <td>5</td> <td>30</td> <td>120</td> </tr> <tr> <td></td> <td>4</td> <td>20</td> <td>6</td> </tr> </table>			start			4	60	240	end	5	30	120		4	20	6	<p>b</p> <table border="1" style="margin-left: 20px;"> <tr> <td></td> <td colspan="2" style="text-align: center;">end start</td> </tr> <tr> <td></td> <td>5</td> <td>420</td> <td>6</td> </tr> <tr> <td></td> <td>6</td> <td>70</td> <td>40</td> </tr> <tr> <td></td> <td>30</td> <td>8</td> <td>240</td> </tr> </table>		end start			5	420	6		6	70	40		30	8	240
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	6	70	40																																										
	30	8	240																																										

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Decimal Addition & Subtraction

1 Fill in the missing digits below to make the inequalities true. There will be more than one correct way to fill in each missing digit.

ex $3 < 1.\underline{5}06 + 1.5$	a $0.705 + 1.\underline{\quad}98 < 2$
b $4 < 2.406 + 1.\underline{\quad}09$	c $1.620 + 1.\underline{\quad}82 > 3$

2 Complete the following addition problems.

$$\begin{array}{r} ^1 ^1 \\ 3.034 \\ + 1.886 \\ \hline 4.920 \end{array}$$

$$\begin{array}{r} 12.32 \\ + 4.099 \\ \hline \end{array}$$

$$\begin{array}{r} 6.005 \\ + 12.243 \\ \hline \end{array}$$

$$\begin{array}{r} 17.28 \\ + 3.8 \\ \hline \end{array}$$

$$\begin{array}{r} 7.853 \\ + 3.629 \\ \hline \end{array}$$

$3.45 + 5.062 = \underline{\hspace{2cm}}$

$8.049 + 4.356 = \underline{\hspace{2cm}}$

3 Complete the following subtraction problems.

$$\begin{array}{r} ^2 ^9 \\ 3.046 \\ - 1.273 \\ \hline 1.773 \end{array}$$

$$\begin{array}{r} 5.38 \\ - 2.4 \\ \hline \end{array}$$

$$\begin{array}{r} 4.263 \\ - 2.051 \\ \hline \end{array}$$

$$\begin{array}{r} 8.03 \\ - 3.485 \\ \hline \end{array}$$

$$\begin{array}{r} 12.238 \\ - 9.065 \\ \hline \end{array}$$

$15.204 - 8.039 = \underline{\hspace{2cm}}$

$13.006 - 12.058 = \underline{\hspace{2cm}}$

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Finding Patterns & Solving Problems

1 Find a pattern and use it to fill in the next 3 numbers in each sequence below. Then explain how you did it.

ex	4	7	10	13	16	<u>19</u>	<u>22</u>	<u>25</u>
		+ 3	+ 3	+ 3	+ 3	+ 3	+ 3	+ 3
Explanation: I added 3 more each time.								
a	1	10	19	28	37	_____	_____	_____
Explanation:								
b	197	186	175	164	153	_____	_____	_____
Explanation:								
c	1	3	9	27	81	_____	_____	_____
Explanation:								
d	1	2	4	8	16	_____	_____	_____
Explanation:								



CHALLENGE

2 Look at the example from problem 1:

4, 7, 10, 13, 16, 19, 22, 25 ...

a What would be the 30th number in the sequence? Show all your work.

b What would be the 100th number in the sequence? Show all your work.

c Would the 876th number in the sequence be odd or even? Explain how you can tell.

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Solving Equations & Pattern Problems

1 Fill in the missing numbers to make each equation true. Hint: *Remember the order of operations.*

ex a $45 - \underline{7} = 38$	ex b $6 = \underline{42} \div 7$	a $\underline{\quad} + 13 = 26 - 8$
b $64 \div \underline{\quad} = 5 + 3$	c $84 - 12 = \underline{\quad} + 60$	d $120 \div 2 = \underline{\quad} - 29$
e $37 = 10 + \underline{\quad} \times 3$	f $(36 - \underline{\quad}) \div 7 = 2$	g $32 = 4 \times 2 + \underline{\quad}$

2 Write an equation in which the missing number has to be 10.



CHALLENGE

3 Look at this sequence:

1, 10, 19, 28, 37 ...

a What would be the 50th number in the sequence? Show all your work.

b Would the 75th number in the sequence be odd or even? Explain how you can tell.

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Variables & Expressions

Sometimes people use letters to represent unspecified amounts. Such letters are called *variables*. For example, if you worked for \$6 an hour, you would multiply the time you worked by 6 to find out what you earned. If we let t represent the time you worked, we could show the amount of money you earned with this expression.

$$6 \times t$$

When we say, “evaluate the expression when $t = 3$,” we mean, “figure out how much money you would make if you worked for 3 hours.” To do this, substitute 3 for t and complete the calculation:

Evaluate the expression $6 \times t$ when $t = 3$.

$6 \times 3 = 18$ This means you would earn \$18 if you worked for 3 hours at \$6 per hour.

1 Evaluate the expression $6 \times t$ when:

a $t = 2$

b $t = 4$

c $t = 5$

d $t = 8$

2 How much money would you make if you worked 15 hours and earned \$6 per hour?

3 Evaluate the following expressions when each variable has the value shown. Use order of operations when you need to.

<p>ex $4 + b$ when $b = 10$ $4 + 10 = 14$</p>
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<p>a $4 + b$ when $b = 23$</p>

<p>b $4 + b$ when $b = 103$</p>
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<p>c $3 \times n - 2$ when $n = 2$</p>

<p>d $3 \times n - 2$ when $n = 4$</p>

<p>e $2 \times k + 12$ when $k = 7$</p>
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<p>f $2 \times k + 12$ when $k = 10$</p>

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Division Review

Make a multiplication menu for each divisor. Complete the sentence to identify a range of reasonable answers. Then use long division to find the exact answer, including the remainder if there is one.

Problem	Multiplication Menu	Range of Reasonable Answers	Your Work	Exact Answer
ex $307 \div 19$	$19 \times 10 = 190$ $19 \times 20 = 380$ $19 \times 5 = 95$ $19 \times 2 = 38$	The answer will be less than <u>20</u> and greater than <u>10</u> .	$ \begin{array}{r} 15 \\ 19 \overline{) 307} \\ \underline{- 190} \\ 117 \\ \underline{- 95} \\ 22 \\ \underline{- 19} \\ 3 \end{array} $	16 r3
1 $547 \div 17$		The answer will be less than _____ and greater than _____.		
2 $450 \div 16$		The answer will be less than _____ and greater than _____.		