Name _____ Date _____

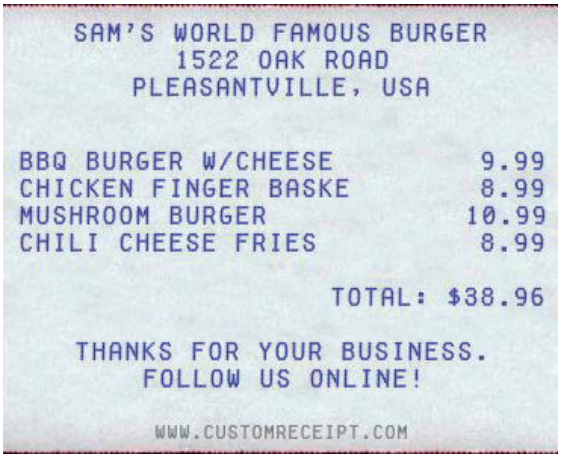
DAY ONE: CALCULATOR ACTIVE

You may use a calculator for this part of the assessment. Show your work to receive full credit.

1. Kara works at a fine jewelry store and earns commission on her total sales for the week. Her weekly paycheck was in the amount of $\$6{,}500$, including her salary of $\$1{,}000$. Her sales for the week totaled $\$45{,}000$. Express her rate of commission as a percent, rounded to the nearest whole number.

2. Kacey and her three friends went out for lunch, and they wanted to leave a 15% tip. The receipt shown below lists the lunch total before tax and tip. The tip is on the cost of the food plus tax. The sales tax rate in Pleasantville is 8.75%.

   a. Use mental math to estimate the approximate total cost of the bill including tax and tip to the nearest dollar. Explain how you arrived at your answer.


SAM'S WORLD FAMOUS BURGER
1522 OAK ROAD
PLEASANTVILLE, USA

BBQ BURGER W/CHEESE	9.99
CHICKEN FINGER BASKE	8.99
MUSHROOM BURGER	10.99
CHILI CHEESE FRIES	8.99

TOTAL: $38.96

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b. Find the actual total of the bill including tax and tip. If Kacey and her three friends split the bill equally, how much will each person pay including tax and tip?

3. Cool Tees is having a Back to School sale where all t-shirts are discounted by 15%. Joshua wants to buy five shirts: one costs $\$9.99$, two cost $\$11.99$ each, and two others cost $\$21.00$ each.

a. What is the total cost of the shirts including the discount?

b. By law, sales tax is calculated on the discounted price of the shirts. Would the total cost of the shirts including the 6.5% sales tax be greater if the tax was applied before a 15% discount is taken, rather than after a 15% discount is taken? Explain.

c. Joshua remembered he had a coupon in his pocket that would take an additional 30% off the price of the shirts. Calculate the new total cost of the shirts including the sales tax.

d. If the price of each shirt is 120% of the wholesale price, write an equation and find the wholesale price for a $\$21$ shirt.

4. Tierra, Cameron, and Justice wrote equations to calculate the amount of money in a savings account after one year with $\frac{1}{2}\%$ interest paid annually on a balance of M dollars. Let T represent the total amount of money saved.

Tierra's Equation:	$T = 1.05M$
Cameron's Equation:	$T = M + 0.005M$
Justice's Equation:	$T = M(1 + 0.005)$

a. The three students decided to see if their equations would give the same answer by using a $\$100$ balance. Find the total amount of money in the savings account using each student's equation. Show your work.

b. Explain why their equations will or will not give the same answer.

5. A printing company is enlarging the image on a postcard to make a greeting card. The enlargement of the postcard's rectangular image is done using a scale factor of 125%. Be sure to show all other related math work used to answer the following questions.

   a. Represent a scale factor of 125% as a fraction and decimal.

   b. The postcard's dimensions are 7 inches by 5 inches. What are the dimensions of the greeting card?

   c. If the printing company makes a poster by enlarging the postcard image, and the poster's dimensions are 28 inches by 20 inches, represent the scale factor as a percent.

d. Write an equation, in terms of the scale factor, that shows the relationship between the areas of the postcard and poster. Explain your equation.

e. Suppose the printing company wanted to start with the greeting card's image and reduce it to create the postcard's image. What scale factor would they use? Represent this scale factor as a percent.

f. In math class, students had to create a scale drawing that was smaller than the postcard image. Azra used a scale factor of 60% to create the smaller image. She stated the dimensions of her smaller image as $4\frac{1}{6}$ inches by 3 inches. Azra's math teacher did not give her full credit for her answer. Why? Explain Azra's error, and write the answer correctly.

Name _____ Date _____

DAY TWO: CALCULATOR INACTIVE

You will now complete the remainder of the assessment without the use of a calculator.

6. A $\$100$ MP3 player is marked up by 10% and then marked down by 10%. What is the final price? Explain your answer.

7. The water level in a swimming pool increased from 4.5 feet to 6 feet. What is the percent increase in the water level rounded to the nearest tenth of a percent? Show your work.

8. A 5-gallon mixture contains 40% acid. A 3-gallon mixture contains 50% acid. What percent acid is obtained by putting the two mixtures together? Show your work.

9. In Mr. Johnson's third and fourth period classes, 30% of the students scored a 95% or higher on a quiz. Let n be the total number of students in Mr. Johnson's classes. Answer the following questions, and show your work to support your answers.

   a. If 15 students scored a 95% or higher, write an equation involving n that relates the number of students who scored a 95% or higher to the total number of students in Mr. Johnson's third and fourth period classes.

   b. Solve your equation in part (a) to find how many students are in Mr. Johnson's third and fourth period classes.

   c. Of the students who scored below 95%, 40% of them are girls. How many boys scored below 95%?

A Progression Toward Mastery					
Assessment Task Item		**STEP 1** **Missing or incorrect answer and little evidence of reasoning or application of mathematics to solve the problem.**	**STEP 2** **Missing or incorrect answer but evidence of some reasoning or application of mathematics to solve the problem.**	**STEP 3** **A correct answer with some evidence of reasoning or application of mathematics to solve the problem OR an incorrect answer with substantial evidence of solid reasoning or application of mathematics to solve the problem.**	**STEP 4** **A correct answer supported by substantial evidence of solid reasoning or application of mathematics to solve the problem.**
1	**7.RP.A.3**	Student answers incorrectly and provides little or no evidence of understanding how to find the rate of commission as a percent. OR Student does not attempt to answer the question.	Student answers incorrectly but provides some evidence of understanding how to find the rate of commission as a percent, although multiple errors are made.	Student correctly finds the rate of commission to be 12% when rounded to the nearest whole number percent, but the work shown does not support the answer. OR Student answers incorrectly due to a calculation error (with or without the use of a calculator); however, a correct process for arriving at the answer is shown. OR Student does not round the answer or rounds incorrectly to state the answer as $12.\overline{2}\%$ or 12.2% but provides adequate work to support the answer.	Student correctly finds the rate of commission to be 12% when rounded to the nearest whole number percent. Substantial evidence of understanding is provided in the steps/work shown.

2	a 7.RP.A.3 7.EE.B.3	Student arrives at an answer that is substantially outside the range of $48–$51. The explanation provides little or no evidence of understanding of percent and how to use mental math and estimation skills to find the total cost of the bill. OR Student does not attempt to answer the question.	Student arrives at an answer that is substantially outside the range of $48–$51. However, the explanation demonstrates some understanding of percent and how to use mental math and estimation skills to find the total cost of the bill, although there are multiple errors.	Student arrives at an answer that is outside the range of $48–$51 but provides an explanation of a correct process, although a calculation error is made. OR Student arrives at an answer that is within the range of $48–$51 for the total cost of the bill, but the explanation is incomplete.	Student arrives at an answer that is within the reasonable range of $48–$51 and provides a thorough explanation of how to arrive at the answer using mental math and estimation skills.
	b 7.RP.A.3	Student answers incorrectly and provides little or no evidence of understanding how to find the tip, tax, or total bill. OR Student does not attempt to answer the question.	Student answers incorrectly but provides work that shows how to correctly find at least one of the following: the amount of the tax or the amount of the tip. Student divides the answer by 4 but states the answer incorrectly because of a rounding error and/or a missing dollar sign. AND Student does not check the answer to determine if the bill will be paid in full if each person pays the amount stated in the answer.	Student states a correct answer of $48.73 or $48.72 for the total bill but does not support the answer with adequate work. AND Student divides the answer by 4 to arrive at the answer and rounds correctly but either does not include a dollar sign on the answer or does not check the answer to determine if the bill will be paid in full if each person pays the amount stated in the answer. OR Student answers incorrectly but provides work that shows a correct process, despite making a calculation error.	Student states a correct answer of $48.73 for the total bill, providing substantial evidence of the steps taken to reach the correct answer. The student divides $48.73 by 4 and states that three people will pay $12.18 and one person will pay $12.19. OR If the student waited to round until the very end of the problem, another acceptable answer is $48.72. Thus, each person would pay exactly $12.18.

3	a 7.RP.A.3 7.EE.B.3	Student answers incorrectly and provides little or no evidence of understanding how to find the discount price. OR Student does not attempt to answer the question.	Student answers incorrectly, but the work shown provides some evidence of understanding how to find the discount price, although there are multiple errors, or a step in the process is missing.	Student answers incorrectly due to a minor error, but the work shown indicates a sound understanding of how to find the discount price. OR Student arrives at the correct answer of $\$64.57$ but does not show adequate work to support the answer.	Student arrives at the correct answer of $\$64.57$, and the work shown includes finding the total costs of the shirts and correctly applying the discount.
	b 7.RP.A.3 7.EE.B.3	Student does not clearly answer yes or no, and the explanation is incomplete, ambiguous, and/or lacks sound reasoning. OR Student does not attempt to answer the question.	Student incorrectly states that, yes, the total cost is greater if the tax is applied before the discount is taken. Student work is incomplete but shows some understanding of how to find the total cost with the tax and discount applied.	Student correctly states that the total amount will be the same, $\$68.77$, but does not adequately explain why. OR Due to a minor calculation error, student incorrectly states that the total cost is greater if the tax is applied before the discount is taken; supporting work is shown.	Student correctly states that the total amount will be the same, $\$68.77$. The explanation shows substantial evidence of understanding how to find the total cost with the tax and discount applied. For example, by using the commutative property of multiplication, the student shows that: $75.97(0.85)(1.065) = 75.97(1.065)(0.85)$.
	c 7.RP.A.3 7.EE.B.3	Student answer is incorrect and provides little or no evidence of understanding how to find the additional 30% discount and final discount price with tax. OR Student does not attempt to answer the question.	Student answer is incorrect, but the work shown contains some evidence of a correct process, although it may be incomplete, contain multiple errors and/or at least one conceptual error. For instance, student finds the amount of an additional 30% discount but does not subtract it from $\$64.57$.	Student states the correct answer of $\$48.14$ but does not provide adequate work to fully support the answer. OR Student answer is incorrect due to a calculation error (with or without the use of a calculator), but student uses a sound process that indicates the steps necessary to find the new total cost of the shirts with tax.	Student states the correct answer of $\$48.14$. Student supports the answer by showing the correct steps taken to arrive at the answer and makes no errors in the calculations.

	d **7.RP.A.3** **7.EE.B.4**	Student does not write a correct equation or solution. The work shown provides little or no evidence of understanding how to find the wholesale price of the shirt. OR Student does not attempt to answer the question.	Student writes an incorrect equation but solves it correctly or demonstrates the correct process to solve it but makes a minor calculation error. OR Student writes a correct equation but makes a conceptual error when solving it. For instance, student converts 120% to 1.20 and writes the equation $21 = 1.2c$ but then erroneously multiplies 1.2 by 21 to find the cost. OR Student arrives at the correct cost of the shirt, $\$17.50$, but does so using another method and does not provide an equation.	Student writes a correct equation, such as $21 = 1.2c$, to find the wholesale price of the shirt and demonstrates the correct process needed to solve the equation. However, a minor calculation error or rounding error (with or without the use of a calculator) causes the student to arrive at an incorrect answer. OR Student writes a correct equation to find the wholesale price of the shirt, such as $21 = 1.2c$, but incorrectly states the price as $\$17.05$, makes another type of rounding error, or does not use a dollar symbol in writing the final answer as 17.50. However, the work shows the correct process and the steps necessary to arrive at the correct answer.	Student writes a correct equation, such as $21 = 1.2c$, to find the wholesale price of the shirt and uses it to arrive at a correct answer of $\$17.50$. Student supports the answer by showing the correct steps taken to arrive at the answer, making no calculation errors.
4	**a** **7.RP.A.3** **7.EE.B.3**	Student states an incorrect answer and does not use each of the three equations to determine the total amount of money in the savings account. OR Student does not attempt to answer the question.	Student states an incorrect answer but does use each of the three equations to determine the total amount of money in the savings account, making multiple calculation errors.	Student states the correct answers of $\$105$ (Tierra) and $\$100.50$ (Cameron and Justice) but does not show adequate supporting work. OR Student states an incorrect answer due to a calculation error (with or without the use of a calculator) but shows correct supporting work substituting 100 into each equation and performing the correct order of operations.	Student states the correct answers of $\$105$ (Tierra) and $\$100.50$ (Cameron and Justice). Student shows the correct supporting work by substituting 100 into each equation and performing the correct order of operations.

	b **7.RP.A.3** **7.EE.B.3**	Student attempts to provide a written explanation but does not explain whether or not the equations will yield the same answer. OR Student does not attempt to answer the question.	Student incorrectly states that the equations will yield the same answer.	Student correctly states that the equations will not yield the same answer but does not provide an adequate explanation to support the claim.	Student correctly states that the equations will not yield the same answer. The explanation is sound and complete. *For instance, Cameron and Justice have the same answers because they correctly converted* $\frac{1}{2}\%$ *to a decimal and used the distributive property, whereas Tierra performed her conversion incorrectly by representing* $\frac{1}{2}\%$ *as* 5%.
5	**a** **7.RP.A.1** **7.RP.A.2**	Student provides incorrect answers for both the decimal and fractional representations of 125%. OR Student does not attempt to answer the question.	Student incorrectly represents 125% as both a decimal and a fraction, although the supporting work shown indicates some understanding of how to convert a percent to a decimal and fraction.	Student correctly represents 125% as both a decimal and a fraction but does not provide any supporting work. OR Student correctly states 125% as either a decimal or a fraction but not both.	Student correctly represents 125% as $\frac{5}{4}$, 1.25, or $\frac{125}{100}$. Student supports the answer by showing the correct steps taken to convert the percent to a decimal and a fraction.

	b **7.RP.A.3** **7.EE.B.3** **7.G.A.1**	Student incorrectly states the dimensions of the greeting card and provides little or no sound mathematical work related to the task. OR Student does not attempt to answer the question.	Student correctly states only one dimension of the greeting card (either 8.75 inches or 6.25 inches) with or without relevant work shown. OR Student incorrectly states the dimensions of the greeting card, but the work shown indicates some understanding of the process involved.	Student correctly states the dimensions of the greeting card to be 8.75 inches and 6.25 inches but does not provide adequate work to support the answers. OR Student demonstrates a correct process to find the dimensions of the greeting card, but a calculation error is made (with or without the use of a calculator), which causes one or both answers to be stated incorrectly. OR Student correctly states only one dimension of the greeting card (either 8.75 inches or 6.25 inches); however, relevant work is shown for *both* dimensions.	Student correctly states the dimensions of the greeting card to be 8.75 inches and 6.25 inches, or $8\frac{3}{4}$ inches by $6\frac{1}{4}$ inches, and provides adequate work to support the answer.
	c **7.RP.A.3** **7.EE.B.3** **7.G.A.1**	Student does not correctly represent the scale factor as a percent, and the work provided indicates little or no understanding of the task involved. OR Student does not attempt to answer the question.	Student does not correctly represent the scale factor as a percent, but the work provided indicates some understanding of finding the ratio of the corresponding side lengths. The ratios may or may not be stated correctly, and the work does not indicate a scale factor of 4.	Student correctly represents the scale factor as 400%, but the work provided does not adequately support the answer. OR Student does not correctly represent the scale factor as 400%, but the work provided demonstrates a correct process of finding the scale factor, indicating a scale factor of 4.	Student correctly represents the scale factor as 400%, and the work provided demonstrates a correct process of finding the scale factor and converting it to a percent.

	d **7.RP.A.3** **7.EE.B.3** **7.G.A.1**	Student attempts to answer the question by finding both areas but does not write an equation to show the relationship between them. (This may or may not include calculation errors.) OR Student does not attempt to answer the question.	Student provides a written expression and, while it may be incomplete, shows some evidence of understanding the relationship that exists. For instance, student writes $16c$ but does not include an equal sign or explain the meaning of the expression.	Student correctly writes an equation in the form: $P = 16c$. The student shows a comparison of the areas of the postcard and poster, but the work contains a minor error, and/or the claim is not fully supported with an explanation. OR Student makes an error in the equation, but the work and explanation provided correctly shows otherwise. For example, student gives an equation of $P = 1{,}600c$.	Student correctly writes an equation in the form: $P = 16c$, where P is the area of the poster, c is the area of the post card, and 16 is the scale factor. Student explanation provides adequate support for the equation, such as finding the areas of the poster (560 sq. in.) and post card (35 sq. in.), and finding the ratio of those areas to be 16 to 1, or $1{,}600\%$.
	e **7.RP.A.3**	Student attempts to answer the question but does not provide a scale factor in the form of a percent, and the scale factor provided is not equivalent to 80% or 125%. OR Student does not attempt to answer the question.	Student sets up the problem backwards to show an enlargement (as in the original problem) instead of a reduction. The supporting work provided represents the scale factor as $\frac{1.25}{1}$, and it may or may not be converted to a percent.	Student sets up the problem correctly (for instance, writes the scale factor as $\frac{1}{1.25}$) but incorrectly or never converts it to a percent (with or without the use of a calculator).	Student sets up the problem correctly, states a scale factor of 80%, and provides complete and correct supporting work to show that $\frac{1}{1.25} = 0.80 = 80\%$.

	f 7.RP.A.3 7.EE.B.3 7.G.A.1	Student attempts to answer the question, but the explanation and/or work is incorrect and incomplete and provides little or no evidence of understanding the error that occurred in Azra's answer. OR Student does not attempt to answer the question.	Student answer is vague and states that Azra's teacher did not give her full credit because the dimensions Azra stated are incorrect. However, some correct work is shown, but it is not complete enough to arrive at the correct dimensions.	Student correctly explains that Azra's teacher did not give her full credit because the dimensions of the smaller image are $4\frac{1}{5}$ in. $\times$ 3 in. instead of $4\frac{1}{6}$ in. $\times$ 3 in. but does not support the claim with adequate work. OR Student correctly explains that Azra's teacher did not give her full credit because one of the dimensions of the smaller image is incorrect. Although the exact correct dimensions are never stated, the work indicates the student computed them.	Student correctly explains that Azra's teacher did not give her full credit because the dimensions of the smaller image are $4\frac{1}{5}$ in. $\times$ 3 in. instead of $4\frac{1}{6}$ in. $\times$ 3 in. and supports the claim with work showing that 60% of 7 is $4\frac{1}{5}$.
6	7.RP.A.3	Student states an incorrect final price and does not explain how to arrive at the final price. OR Student does not attempt to answer the question.	Student states an incorrect final price, but the explanation, although incomplete or only partially correct, indicates some understanding of markup or markdown and of the steps involved in solving the problem. OR Student states a correct final price of \$99 but provides no supporting explanation of how to arrive at that price.	Student states a correct final price of \$99, but the explanation provided does not fully support the answer. For instance, student explains the steps taken to find the 10% markup price but does not explain how to then take the 10% markdown to arrive at the final answer. OR Student states an incorrect final price due to a minor calculation error but provides a correct explanation that includes the correct steps to first find a 10% markup and then take a 10% markdown on that price.	Student states a correct final price of \$99 and provides a complete and thorough explanation. For example, student states, "First I multiplied 100 by 1.10 to find the price after the 10% markup. I arrived at \$110 for the markup price. Then, I multiplied 110 by 0.9 to find the price after it was marked down by 10%. I arrived at \$99 for the final price because $110\ (0.9) = 99$."

7	7.RP.A.3 7.EE.B.3	Student states an incorrect percent increase in the water level and shows little or no relevant work to support the answer. OR Student does not attempt to answer the question.	Student states an incorrect percent increase in the water level, but the work shown indicates a partial understanding of the necessary steps involved, although the work is not entirely correct or complete.	Student correctly states a 33.3% percent increase in the water level, but the work shown does not fully support the answer. OR Student states an incorrect percent increase in the water level (such as 33%) due to a minor calculation or rounding error but provides math that shows the correct steps to find the percent increase in the water level.	Student correctly states a 33.3% percent increase in the water level and shows adequate supporting work with no errors.
8	7.RP.A.3	Student states an incorrect percent of acid in the combined mixtures and shows little or no relevant work to support the answer. OR Student does not attempt to answer the question.	Student states an incorrect percent of acid in the combined mixtures but shows some work that indicates a partial understanding of the steps involved, although there are multiple errors.	Student correctly states that the percent of acid in the combined mixtures is 43.75%, or $43\frac{3}{4}\%$, but the work shown does not fully indicate how the student arrives at that answer. OR Student shows the correct work that indicates the steps necessary to arrive at the correct answer, but a rounding or minor calculation error is made resulting in an incorrect answer such as 43% or 44%. OR Student states an incorrect answer but finds the percent of acid in the 3- and 5-gallon solutions and shows the necessary work. However, a mistake is made when calculating the percent of acid in the 8-gallon solution.	Student correctly states that the percent of acid in the combined mixtures is 43.75%, or $43\frac{3}{4}\%$. Student work shows a thorough and correct understanding of the steps required to reach the answer, with no errors made through multiple steps.

9	a 7.RP.A.3 7.EE.B.3	Student answer is not in the form of an equation, and the written work indicates little or no understanding of using an equation to represent the proportional relationship involving percent. OR Student does not attempt to answer the question.	Student attempts to write an equation, and although it is not an equation, the written work is relevant. For example, student only writes an expression such as $0.3n$. OR Student writes an equation involving n, but the equation does not show an adequate understanding of the proportional relationship that exists.	Student writes an equation, involving n, in the form: $\text{Part} = \text{Percent} \times \text{Whole}$ (or an equivalent form), but when substituting the values into the equation, an error is made. For instance, student mistakenly uses 95% instead of 30% in the equation and writes the relationship as $15 = 0.95n$ or an equivalent form.	Student writes a correct equation as $15 = 0.3n$ or an equivalent form.
	b 7.RP.A.3 7.EE.B.4	Student arrives at an incorrect answer and provides little or no evidence of understanding how to solve the equation. OR Student does not use the equation in part (a) to solve the problem. The answer provided may or may not be correct. OR Student does not attempt to answer the question.	Student arrives at an incorrect answer but attempts to solve the equation written in part (a), although there is a conceptual error in the solution process.	Student arrives at a correct answer of 50 students using the correct equation written in part (a). However, student does not show adequate work to indicate the process and steps taken to arrive at the answer. OR Student arrives at an incorrect answer using the correct equation written in part (a) due to a minor calculation error. However, student shows work that indicates a sound understanding of the correct process and steps necessary to reach the correct answer. OR Student arrives at a correct answer based on an incorrect equation written in part (a) and shows work that indicates a sound understanding of the correct process and steps necessary to reach the correct answer.	Student arrives at a correct answer of 50 students using the correct equation written in part (a). The work provided indicates a sound understanding of the correct process and steps necessary to reach the correct answer; the calculations contain no errors.

	c 7.RP.A.3 7.EE.B.3	Student states an incorrect answer and provides little or no evidence of understanding the steps involved in finding the number of boys who scored below 95%. OR Student does not attempt to answer the question.	Student states an incorrect answer, but the work shown provides some evidence of understanding the process involved. For instance, student shows how to find 60% of a quantity or 40% of a quantity (although it may not be the correct quantity) and/or how to arrive at the number of students who scored below a 95%, which is 35 students.	Student states the correct answer of 21 boys. However, student does not show adequate work to indicate the process and steps taken to arrive at the answer. OR Student states an incorrect answer due to a minor calculation error. However, the work shown indicates a sound understanding of the correct process and steps necessary to reach the correct answer.	Student states the correct answer of 21 boys. The work shown indicates a sound understanding of the correct process and steps necessary to reach the correct answer; the calculations contain no errors.

Name _____ Date _____

DAY ONE: CALCULATOR ACTIVE

You may use a calculator for this part of the assessment. Show your work to receive full credit.

1. Kara works at a fine jewelry store and earns commission on her total sales for the week. Her weekly paycheck was in the amount of $6,500, including her salary of $1,000. Her sales for the week totaled $45,000. Express her rate of commission as a percent. Round to the nearest whole number.

6500 − 1000 = 5500 in commission

r: commission rate

part = percent × whole

$\frac{5500}{45000} = \frac{r(45000)}{45000}$

$\frac{5500}{45000} = r$

$0.12 \approx r$

$0.12 = \frac{12}{100} = 12\%$

$45000 \overline{)550000}$ → .12

45000

100000

90000

10000

The commission rate is 12%.

2. Kacey and her three friends went out for lunch, and they wanted to leave a 15% tip. The receipt shown lists the lunch total before tax and tip. The tip is on the cost of the food plus tax. The sales tax rate in Pleasantville is 8.75%.

   a. Use mental math to estimate the approximate total cost of the bill including tax and tip to the nearest dollar. Explain how you arrived at your answer.

I think the bill will be about $50.00. I found my answer by rounding the total to $40.00. Then, I multiplied by 0.09, which is close to 8.75%. I got $3.60 in tax. I added that to $40.00 to get $43.60, which is close to $44.00. I know 10% of $44.00 is $4.40, and 5% would be $2.20. So, the total, plus a 15% tip is approximately $44.00 + $6.60 = $50.60.

SAM'S WORLD FAMOUS BURGER
1522 OAK ROAD
PLEASANTVILLE, USA

BBQ BURGER W/CHEESE	9.99
CHICKEN FINGER BASKE	8.99
MUSHROOM BURGER	10.99
CHILI CHEESE FRIES	8.99
TOTAL:	$38.96

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b. Find the actual total of the bill including tax and tip. If Kacey and her three friends split the bill equally, how much will each person pay including tax and tip?

38.96
× 0.0875
3.409 sales tax

38.96
+ 3.409
42.369
↓
$42.37 sales tax + total

42.37
× 0.15
6.3555
↓
$6.36 tip

42.37
+ 6.36
48.73 total plus tax and tip
$48.73

12.1825
4 | 48.7300
-4↓
08
-8
07
-4
33
-32
10
-8
20
-20
0

Three people will have to pay $12.18, and one person will have to pay $12.19.

3. Cool Tees is having a Back to School sale where all t-shirts are discounted by 15%. Joshua wants to buy five shirts: one costs $9.99, two cost $11.99 each, and two others cost $21.00 each.

a. What is the total cost of the shirts including the discount?

11.99
× 2
23.98

21.00
× 2
42.00

23.98
42.00
+ 9.99
75.97

75.97
× 0.85
64.57

100%
-15%
85%

The total cost with the discount is $64.57.

b. By law, sales tax is calculated on the discounted price of the shirts. Would the total cost of the shirts including the 6.5% sales tax be greater if the tax was applied before a 15% discount is taken, rather than after a 15% discount is taken? Explain.

The total cost would be the same because of the commutative property of multiplication. Either way, the total cost, including tax and discount, is $68.77.

Tax applied after discount

Cost = Percent x whole x Tax Rate
= (0.85)(75.97)(1.065)
= 68.77

Tax applied before discount

Cost = Percent x whole x Tax Rate
= (1.065)(75.97)(0.85)
= 68.77.

c. Joshua remembered he had a coupon in his pocket that would take an additional 30% off the price of the shirts. Calculate the new total cost of the shirts including the sales tax.

64.57
x 0.70
45.199
↓
$45.20 discount price
x 0.065
2.938
↓
$2.94 sales tax

45.20
+ 2.94
$48.14

100%
- 30%
70%

The new total cost of the shirts will be $48.14.

d. If the price of each shirt is 120% of the wholesale price, write an equation and find the wholesale price for a $21 shirt.

$1.2c = 21$

$\frac{1.2c}{1.2} = \frac{21}{1.2}$

$c = 17.5$

The cost price is $17.50.

c is cost price
120% = 1.2

$1.2\overline{)21.0}$

$12\overline{)210.0}$

17.5
12 | 210.0
12↓
90
-84↓
60
-60
0

4. Tierra, Cameron, and Justice wrote equations to calculate the amount of money in a savings account after one year with $\frac{1}{2}\%$ interest paid annually on a balance of M dollars. Let T represent the total amount of money saved.

Tierra's Equation:	$T = 1.05M$
Cameron's Equation:	$T = M + 0.005M$
Justice's Equation:	$T = M(1 + 0.005)$

a. The three students decided to see if their equations would give the same answer by using a $\$100$ balance. Find the total amount of money in the savings account using each student's equation. Show your work.

$T = 1.05(\$100) = \$105$

$T = \$100 + 0.005(\$100) = \$100 + \$0.5 = \$100.50$

$T = \$100(1 + 0.005) = \$100(1.005) = \$100.50$

b. Explain why their equations will or will not give the same answer.

Cameron's and Justice's equations give the same answers but Tiara's does not. Tiara's equation is set up correctly, but she made a mistake when she changed ½% to a decimal.

½% = 0.5% = 0.005

Cameron and Justice both used the distributive property to solve their equations and the correct decimal of 0.005. This is why their answers are the same.

5. A printing company is enlarging the image on a postcard to make a greeting card. The enlargement of the postcard's rectangular image is done using a scale factor of 125%. Be sure to show all other related math work used to answer the following questions.

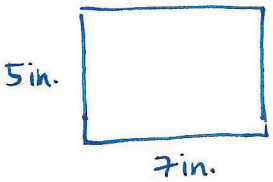
   a. Represent a scale factor of 125% as a fraction and decimal.

$\frac{125\%}{100\%} = 1.25$ decimal

$\frac{125 \div 25}{100 \div 25} = \frac{5}{4}$ fraction

$$\begin{array}{r} 1.25 \\ 100\overline{)125.00} \\ -100\downarrow \\ \hline 250 \\ 200\downarrow \\ \hline 500 \\ -500 \\ \hline 0 \end{array}$$

   b. The postcard's dimensions are 7 inches by 5 inches. What are the dimensions of the greeting card?

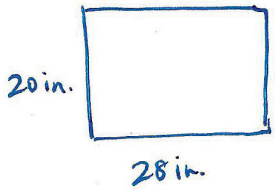


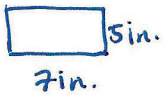
$1.25 \times 7 = 8.75$

$1.25 \times 5 = 6.25$

The dimensions of the greeting card are 8.75 in. by 6.25 in.

   c. If the printing company makes a poster by enlarging the postcard image, and the poster's dimensions are 28 inches by 20 inches, represent the scale factor as a percent.





$\frac{28 \div 4}{20 \div 4} = \frac{7}{5}$

$\frac{7}{5} = \frac{7}{5}$

4 is the scale factor, which is 400%.

d. Write an equation, in terms of the scale factor, that shows the relationship between the areas of the postcard and poster. Explain your equation.

Area of Poster

$A = \ell w$

$= (28\text{ in})(20\text{ in})$

$= 560\text{ in}^2$

Area of Postcard

$A = \ell w$

$= (7\text{ in})(5\text{ in})$

$= 35\text{ in}^2$

$35\overline{)560}$ → 16, -35, 210, -210, 0

The area of the poster is 16 times the area of the post card. The scale factor is 16, or 1600%. So, my equation is $P = 16c$, where P is the area of the poster, 16 is the scale factor, and c is the area of the post card.

e. Suppose the printing company wanted to start with the greeting card's image and reduce it to create the postcard's image. What scale factor would they use? Represent this scale factor as a percent.

PC → GC

Scale factor: $\frac{5}{4}$

$\frac{8.75}{7} = \frac{6.25}{5}$

$1.25 = 1.25$

$\frac{5}{4}$

GC → PC

Scale factor: $\frac{4}{5}$

$\frac{7}{8.75} = \frac{5}{6.25}$

$0.80 = 0.80$

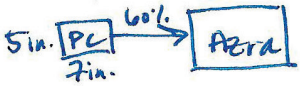
$\frac{4}{5} = 80\%$

$5\overline{)4.0}$ → 0.8, -40, 0

The scale factor is 80%.

f. In math class, students had to create a scale drawing that was smaller than the postcard image. Azra used a scale factor of 60% to create the smaller image. She stated the dimensions of her smaller image as $4\frac{1}{6}$ inches by 3 inches. Azra's math teacher did not give her full credit for her answer. Why? Explain Azra's error, and write the answer correctly.

Azra did not receive full credit because she made an error when changing her decimal to a fraction. She wrote $4\frac{2}{10} = 4\frac{1}{6}$, but it is $4\frac{2}{10} = 4\frac{1}{5}$ because 2 and 10 are divisible by 2.



$\begin{array}{r} 7 \\ \times 0.6 \\ \hline 4.2 \end{array}$ $\begin{array}{r} 5 \\ \times 0.6 \\ \hline 3.0 \end{array}$ $60\% = 0.6$

$4.2 = 4\frac{2}{10} = 4\frac{1}{5}$

The dimensions of her image are $4\frac{1}{5}$ in. by 3 in.

Name _____ Date _____

DAY TWO: CALCULATOR INACTIVE

You will now complete the remainder of the assessment without the use of a calculator.

6. A $100 MP3 player is marked up by 10% and then marked down by 10%. What is the final price? Explain your answer.

10% Markup: 1.1

100 × 1.1 = 100 + 1000 = 1100

$110

100% + 10% = 110%

10% Markdown: 0.9

110 × 0.9 = 990

$99

100% − 10% = 90%

The final price is $99.00.

7. The water level in a swimming pool increased from 4.5 feet to 6 feet. What is the percent increase in the water level, rounded to the nearest tenth of a percent? Show your work.

$\frac{(6-4.5)}{4.5} \times 100\%$

$\frac{1.5}{4.5} \times 100\%$

$0.333 \times 100\%$

33.3%

6.0 − 4.5 = 1.5

$4.5\overline{)1.5}$

$45\overline{)150.0}$ = 3.3

−135, 150, −135, 15

8. A 5-gallon mixture contains 40% acid. A 3-gallon mixture contains 50% acid. What percent acid is obtained by putting the two mixtures together? Show your work.

5 gal. : 40% acid

5 × 0.4

2 gal. of acid

3 gal : 50% acid

3 × 0.5

1.5 gal. of acid

2 gal. + 1.5 gal. = 3.5 gal.

5 gal. + 3 gal. = 8 gal.

$\frac{\text{acid}}{\text{mixture}} = \frac{3.5}{8} = 0.4375$

$= 43.75\%$ acid

$8\overline{)3.5000}$ = 0.4375

−32, 30, −24, 60, −56, 40

9. In Mr. Johnson's third and fourth period classes, 30% of the students scored a 95% or higher on a quiz. Let n be the total number of students in Mr. Johnson's classes. Answer the following questions, and show your work to support your answer.

   a. If 15 students scored a 95% or higher, write an equation involving n that relates the number of students who scored a 95% or higher to the total number of students in Mr. Johnson's third and fourth period classes.

   $0.3n = 15$

   b. Solve your equation in part (a) to find how many students are in Mr. Johnson's third and fourth period classes.

   $\frac{0.3n}{0.3} = \frac{15}{0.3}$

   $n = 50$

   $0.3\overline{)150}$ $3\overline{)150}$ $\begin{array}{r}50\\ -15\\ \hline 00\end{array}$

   50 students

   c. Of the students who scored below 95%, 40% of them are girls. How many boys scored below 95%?

   $\begin{array}{r}50\\ -15\\ \hline 35\end{array}$ students below 95%.

   40% girls

   100 − 40 = 60% boys

   $\begin{array}{r}35\\ \times 0.6\\ \hline 21.00\end{array}$

   21 students are boys.