LHF STUDY GUIDE
PASS THE HiSET® MATH TEST!

WORD PROBLEMS
Part One

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LESSON ONE Mixed Word Problems Set One

Most of the problems in this set involve earnings or costs that are made up of two or three different parts that need to be calculated separately and then added together. Read through the six examples and then do the Practice Questions.

Tip: For amounts written as 7 cents or 7¢, you will usually be asked to give an answer in dollars. Be sure to express correctly as money when doing calculations. 7 cents should be written as 0.07, because it is 7 100ths of 1 dollar. It should not be written as 7, which would be 7 dollars, and it should not be written as 0.70, which would be 70 cents. 20 cents should be written as 0.20, because it is 20 100ths of 1 dollar. It should not be written as 20, which would be 20 dollars.

Note – Multiplication can be expressed by a number next to parentheses or by numbers in parentheses next to each other. For example \$6(400 – 250) is the same as \$6 x (400 – 250), and (\$25)(\$3.50) is the same as \$25 x \$3.50.

Example 1

Shonda earns \$10 per hour at Sneakers Plus. She is also paid a \$2 commission on every pair of sneakers she sells. How much did Shonda earn if she worked 6 hours and sold 9 pairs of sneakers?

A. \$102 B. \$27 C. \$74 D. \$66 E. \$78

Shonda's earnings have two parts that need to be added together, the hourly pay and the commission pay.

The hourly pay is 6 hours x \$10 = \$60.
The commission pay is 9 pairs of sneakers x \$2 = \$18.
\$60 + \$18 = \$78, so the **answer is E. \$78.**

Example 2

Samuel's telephone plan costs \$15 per month plus 5 cents for each phone call that is made. If 65 phone calls are made in a month, which expression represents the telephone bill for that month?

A. \$15 + (\$5)(65) B. \$15 + 65 C. 65 + (\$0.05)(\$15)
D. \$15 + (\$0.05)(65) E. (\$15)(\$5) + 65

Note that you need an expression, not a numerical answer.

There are two parts that make up the telephone bill, the monthly fee and the charge for phone calls made, so you need an expression that adds together these two parts.

The monthly fee is \$15.
The charge for phone calls made is 65 calls times 5 cents per call, or, (65)(\$0.05).
Add the two parts together, so the **answer is D. \$15 + (\$0.05)(65)** .
Note that 5 cents is written as \$0.05, not \$5.

Example 3

Salespeople at Rick's Used Cars earn a base pay of $1,200 per month, plus a $150 per car commission for the first 10 cars they sell during the month. Any cars beyond 10 that they sell earn a commission that is 2 times the rate for the first 10 cars. What is the total pay for a salesperson that sells 13 cars in a month?

A. $3,600 B. $2,700 C. $3,150 D. $1,350 E. $6,600

The total pay is made up of three different pieces: the base pay, the commission for the first 10 cars sold, and the commission for any cars sold over 10. Calculate each piece and then add them together.

1. Base pay is **$1,200.**
2. Commission on the first 10 cars is $150 per car, so 10 x $150 = **$1,500.**
3. To get commission for the rest of the cars, you need two pieces of information:
   1) The commission rate, which is 2 times the first rate, or 2 x $150 = $300 per car.
   2) The number of cars that get this rate, which is the total cars sold minus the first 10 cars you have already accounted for, or 13 – 10 = 3 cars.

   Commission on these cars is 3 x $300 = **$900.**

Add the three parts together.
$1,200 + $1,500 + $900 = $3,600, so the **answer is A. $3,600**.

Example 4

Ace Cable TV pays their Sales Representatives a $3 commission for each of the first 200 cable plans they sell per month. Any additional plans sold in the same month earn a commission that is 1.5 times the rate for the first 200 plans. If someone sells 812 cable plans in a month, what is the total commission earned that month?

A. $2,436 B. $3,354 C. $1,218 D. $2,754 E. $600

To get total commission, add together two pieces: the commission for the first 200 plans + the commission for the rest of the plans.

1. The first 200 plans earn $3 per plan, so 200 x $3 = $600.
2. To get commission for the rest of the plans, you need two pieces of information:
   1) The commission rate, which is 1.5 times the first rate, or 1.5 x $3 = $4.50 per plan.
   2) The number of plans that get this rate, which is the total plans sold minus the first 200 plans you have already accounted for, or, 812 – 200 = 612 plans.

   Commission on these plans is 612 x $4.50 = **$**2,754.

Add the two pieces together. $600 + $2,754 = $3,354, so the **answer is B. $3,354**.

Example 5

Sue bought a living room furniture set and paid $2,400 cash. Yolanda also bought a $2,400 living room set, but instead of paying cash, she used a credit plan. She made a $600 down payment, and will make payments of $90 per month for 2 years. How much less did Sue pay than Yolanda?

A. $2,160 B. $2,760 C. $1,380 D. $1,610 E. $360

Calculate how much Yolanda paid, then compare it to the $2,400 that Sue paid.
Yolanda paid $600 + $90 x 24 months = $2,760, and the problem tells you Sue paid $2,400.
$2,760 – $2,400 = $360, so the **answer is E. $360.**

In problems like this, be sure to convert each year to 12 months before multiplying.

Beware that in multi-step problems like this, the answer to your first calculation, in this case, $2,760, is not the right answer to the question, but it will usually be one of the multiple choice answers that you are given.

Example 6

Michael's cell phone plan has no monthly charge, but he has to pay 75 cents for each text and $1.25 for each phone call. In one month there were 22 texts and 30 phone calls. Which expression shows how much his bill will be?

A. $0.75 + $1.25 x 52 B. $0.75 x 30 + $1.25 x 22 C. $1.25 x (22 + 30)
D. $0.75 x 22 + $1.25 x 30 E. $2.00 x (22 + 30)

Add together the charge for the texts and the charge for the phone calls.

Charge for texts is 22 texts x $0.75.
Charge for phone calls is 30 x $1.25.
So, the **answer is D. $0.75 x 22 + $1.25 x 30.**

PRACTICE – Mixed Word Problems Set One

Answers – p. 23

1. The telephone company charges a monthly fee of $26.75 plus 7 cents for every phone call made. If 39 phone calls are made in a month, how much will the telephone bill be?

A. $299.75 B. $29.48 C. $65.75 D. $33.75 E. $187.25

2. Juan's cell phone plan charges $38.50 per month, which includes unlimited texts and 50 phone calls. Any additional phone calls are billed at 22¢ per call. Which of the following expressions represents his cell phone bill in a month where Juan makes 68 phone calls?

A. $38.50 + ($0.22)(68) B. $38.50 + 50 C. $38.50 + ($22)(18)
D. $38.50 + ($0.22)(18) E. 50 x $0.22

3. Janel purchased a laptop computer on a credit plan. Her payments are $30 per month for 2 years. Mark bought the same laptop, paying $600 cash. By paying cash, how much money did Mark save?

A. $720 B. $540 C. $570 D. $630 E. $120

4. Life insurance salespeople earn a base pay of $900 per month plus a $50 commission for each policy sold. Which expression represents the total monthly pay for a salesman who sells 22 policies in a month?

A. $900 + $50 B. $900 + ($50)(22) C. 22($900 + $50)
D. (22)($900) + $50 E. ($950)(22)

5. Lenore is renting a car that costs $18 per day plus 10¢ for each mile driven. How much will she pay if she rents the car for 5 days and drives 250 miles?

A. $115 B. $90 C. $43 D. $268 E. $278

6. One cell phone plan has a base charge of $42 per month, which includes 300 minutes. All minutes used after the first 300 are charged 2 cents per minute. Which expression shows what the bill is in a month where 750 minutes are used?

A. $42 + $0.02(750 – 300) B. $42 + $2(750 – 300) C. $42 + $2(750)
D. $42 + $0.02(750) E. $42 + (750 – 300)

7. The telephone company charges a monthly fee of $60 which includes unlimited local calls and 10 long distance calls. Additional long distance calls are billed at 75¢ per call. If Sue makes 48 local calls and 15 long distance calls, what is her bill for the month?

A. $71.25 B. $67.50 C. $96.00 D. $75.00 E. $63.75

8. To rent a car it costs $35 per day and 15 cents per mile for every mile driven over 300 miles. If Sinya rents a car for 4 days and drives 500 miles, which expression shows how much will it cost to rent the car?

A. $35 x 4 + $15 x 200 B. $35 x 4 + $0.15 x 200
C. $35 x 4 + 200 D. $35 + 4 x 500 E. $35 + 300 x $0.15

9. Car salespeople earn $1,200 per month plus a $365 commission for every car they sell. If Diane sold 4 cars last month, what were her total earnings?

A. $1,565 B. $5,165 C. $2,660 D. $1,569 E. $4,800

10. Mr. Boden can buy a washer and dryer for $1,650 cash, or he can make payments of $85 per month for 2 years. Which expression shows how much he will save by paying cash?

A. ($85 x 24) – $1,650 B. $1,650 – ($85 x 24) C. ($85 x 2) – $1,650
D. $85 + 24 – $1,650 E. ($1,650 – $85) x 24

11. Tisha is buying tile to redo her kitchen and dining room floors. Desert Rose tile costs $12 per square foot, and Tawny Dream tile costs $10 per square foot. If she needs 250 square feet of tile, which expression shows how much will she save by choosing the less expensive tile?

A. 250($12 + $10) B. $12 x 250 + $10 C. ($12 x 250) – ($10 x 250)
D. 250 + $12 + $10 E. ($12 + 250) – ($10 + 250)

12. At Couches Unlimited, the first 12 couches sold in a month earn a salesperson a $50 commission per couch. If any couches over 12 are sold during the month, those couches earn a commission per couch that is 2 times the commission rate for the first 12 couches. If Jay sold 18 couches in March, what was his commission in March?

A. $1,200 B. $900 C. $2,400 D. $1,800 E. $600

13. Angelo can buy a computer for $700 cash. He can also buy it using the store credit plan where he will have to make a $200 down payment, and pay $100 per month for 6 months. How much can Angelo save if he chooses to pay cash?

A. $800 B. $300 C. $400 D. $500 E. $100

14. Lenore earns $700 base pay plus a $50 commission per sale for the first 18 alarm systems that she sells each month. Any alarm systems beyond 18 that she sells earn her a commission rate that is 1.5 times the rate for the first 18 alarm systems. How much will Lenore earn in a month where she sells 26 alarm systems?

A. $2,000 B. $2,200 C. $750 D. $1,600 E. $1,402

15. Elisa is having some dental work done, and she can either use the credit plan offered by her dentist, or she can pay $1,500 cash. With the credit plan, she will make a $300 down payment and pay $50 per month for 3 years. How much more will she pay in total if she uses the credit plan instead of paying cash?

A. $1,800 B. $2,100 C. $600 D. $450 E. $300

LESSON TWO Mixed Word Problems Set Two

Try the six examples you see below. If you're not sure how to do one, read through the explanation under the example. Then, go on and do the Practice Questions.

Example 1

Jasmine's bank balance was $3,450.75 on Monday morning. During the week she wrote a rent check for $600 and a check for her car payment of $275. She also deposited her paycheck of $1,246.67, and used the ATM to get $60 in cash. What is her bank balance at the end of the week after all these transactions?

A. $1,269.08 B. $4,962.43 C. $3,762.42 D. $3,822.42 E. $3,487.42

Start with the opening balance, subtract any money that came out of the bank account, and add any money that went into the bank account.

$3,450.75 – $600 – $275 + $1,246.67 – $60 = $3,762.42 so the **answer is C. $3,762.42**.

Example 2

Last month Sammy stocked up on soup when it was on sale. If each can of soup cost 75 cents, and he spent a total of $24, how many cans did he buy?

A. 18 B. 22 C. 28 D. 32 E. 38

There are several ways to solve this problem.

Divide total cost by cost per can to get number of cans. $24 ÷ $0.75 = 32, so the **answer is D. 32.**

OR, set up a proportion. $\frac{\text{Cans}}{\text{Cost}} \quad \frac{1}{\$0.75} = \frac{?}{\$24}$

To solve a proportion, multiply the diagonals and divide by the remaining number.

$24 x 1 ÷ $0.75 = **32**

OR, if you're not sure what to do, use trial and error with the five possible answers that are given to see which number of cans x $0.75 per can will total to $24.

Try A. 18	Does 18 cans x $0.75 per can = $24?	No, it is $13.50, so 18 cans is not the right answer.
Try B. 22	Does 22 cans x $0.75 per can = $24?	No, it is $16.50, so 22 cans is not the right answer.
Try C. 28	Does 28 cans x $0.75 per can = $24?	No, it is $21.00, so 28 cans is not the right answer.
Try D. 32	Does 32 cans x $0.75 per can = $24?	Yes, it does equal $24, so 32 cans is the right answer.

Example 3

The Morrison Charity Association gets an average of 74 donations per month. At the same rate, which expression shows how many donations will be received in the next 4 ½ months?

A. 74 ÷ 4 ½ B. 74 x 4 ½ C. 74 + 4 ½ D. 4 ½ ÷ 74 E. 74 – 4 ½

Multiply 74 donations each month times 4 ½ months, so the **answer is B. 74 x 4 ½**.

Example 4

Lester's printer can print 16 pages per minute. How many pages can he print in 10 days if he uses his printer for 2 hours every day?

A. 320 B. 960 C. 1,920 D. 9,600 E. 19,200

You are given 16 pages per minute.
First calculate how many pages he can print in 1 hour.
16 pages per minute x 60 minutes per hour = 960 pages per hour.

Next calculate how many pages he can print in 1 day.
960 pages per hour x 2 hours per day = 1,920 pages printed in 1 day.

Then multiply by 10 to get pages printed in 10 days.
1,920 pages per day x 10 days = 19,200 pages printed in 10 days,
so **answer is E. 19,200.**

Do this type of problem in steps. Use the time unit you are given to calculate the next largest time unit, and continue calculating the next largest time unit until you get to the time unit asked for in the problem.
In this problem, you are given pages per minute, so first calculate pages per hour, then pages per day, and finally pages in 10 days. Note that each step is to the next largest time unit: per minute, then
per hour, then
per day, and finally
per the 10 days that the problem asks for.

Memorize the following conversions if you do not already know them:

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 week = 7 days
1 year = 12 months

Example 5

Kendra has rented 8 tables at the Dedham Holiday Bazaar for $75 per table. She will be selling holiday wreaths for a price of $30 each. How many of the 200 wreaths she is bringing will Kendra have to sell to pay for her table rental fee?

A. 83 B. 29 C. 20 D. 315 E. 600

Calculate the total rental fee for the tables, then divide by $30 to see how many wreaths must be sold to earn that amount.
Table rental cost is 8 x $75 = $600, and $600 ÷ $30 = 20 wreaths, so **answer is C. 20.**

Note that the number of wreaths she brings does not affect the calculation.

OR, If you calculate the total rental cost as $600, and then aren't sure what to do, you can solve by using trial and error with the five possible answers given.

Try A. 83	Does 83 wreaths x $30 = $600	No, it is $2,490, so 83 is not the right answer, and is way too high.
Try B. 29	Does 29 wreaths x $30 = $600	No, it is $870, so 29 is not the right answer, and is a little too high.
Try C. 20	Does 20 wreaths x $30 = $600	Yes, it does equal $600, so the right answer is 20 wreaths.

If 20 wreaths are sold it will bring in $600, which is enough to pay the table rental fee.

Example 6

The cost of running the Littleton Festival is $35,000. Ticket sales will bring in $22,000 and the city of Littleton will contribute $5,000. Ads in the Littleton Festival Guide will be sold for $500 each. Which of the following expressions shows how many ads must be sold to cover the rest of the cost of running the festival?

A. $500 ÷ ($35,000 – $27,000) B. $35,000 – $27,000 ÷ $500 C. $35,000 ÷ $500
D. ($35,000 – $27,000) ÷ $500 E. $22,000 ÷ $500

Calculate the total amount of money that still has to be raised, and divide it by $500 to see how many ads must be sold.

$22,000 + $5,000 has already been raised, and together this is $27,000.
$35,000 is the total needed, so the amount left to be raised is ($35,000 – $27,000).
To see how many ads must be sold, divide the amount to be raised by the cost of each ad, so the **answer is D. ($35,000 – $27,000) ÷ $500.**

The correct answer could also have been expressed as $\frac{\$35,000 - \$27,000}{\$500}$.
Think of the fraction bar as a division sign.

Note that answer B. $35,000 – $27,000 ÷ $500 is **not** correct. Order of operations says to do division first, and then subtraction, which will not give the correct answer. In answer D, order of operations says to do what is inside the parentheses first, and then the division, which will give the correct answer.

PRACTICE – Mixed Word Problems Set Two

Answers – p. 28

1. For a charity's fundraising drive, a local business will give $25 for every donation the charity gets from a first time donor. If 420 donations were received, and half of these were from first time donors, how much will the local business give the charity?

A. $5,250 B. $10,500 C. $5,520 D. $445 E. $990

2. Falice works at her company's computer help desk, and answers 3 calls per hour. If she works 8 hours per day and 5 days per week, which expression shows how many calls she will answer in 1 week?

A. 3 x 8 + 5 B. 8 x 5 – 3 C. (3 x 8) ÷ 5 D. 3 + 8 x 5 E. 3 x 8 x 5

3. Sue has printed 300 copies of her new Guide To Healthy Cooking at a cost of $1.25 per copy. If she sells them for $15 each, how many copies does she need to sell to cover the total cost of printing the 300 copies?

A. 15 B. 20 C. 25 D. 36 E. 35

4. LaShawn's Bookmobile started the week with 3,262 books. On Monday 62 books were checked out and 27 books were returned. On Tuesday 32 books were checked out and 45 books were returned. Which expression shows how many books were in the Bookmobile at the end of the day Tuesday?

A. 3,262 + 62 – 27 + 32 – 27 B. 3,262 – 62 + 27 – 32 + 45
C. 3,622 – 62 + 27 – 32 + 45 D. 3,262 + (62 – 27) + (45 – 32)
E. 3,262 – (62 – 27) – (45 – 32)

5. For every TV that he sells, Ace Electronics pays Charlie a $15 commission. If his commission check was $525, how many TVs did he sell?

A. 7,875 B. 35 C. 2,625 D. 105 E. 36

6. On average, Ben and his crew can paint 8 houses per month. About how many houses can they paint over the next 6 ½ months if they continue at the same rate?

A. 14 ½ B. 25 C. 45 ½ D. 52 E. 48

7. Alonzo spends 4 hours per day entering deposit tickets. If he can enter 16 deposit tickets per minute, how many deposit tickets can he enter in 3 days?

A. 192 B. 3,840 C. 11,520 D. 11,250 E. 1,280

8. SueAnne needs to make a total of 150 wedding favors. She has already made 60 favors, and will make another 15 by the end of the day. If she can make 25 favors per day, which expression shows how many more days after today it will take her to finish making all the favors?

A. (150 – 60 – 15) ÷ 25 B. 25 ÷ (150 – 60 – 15) C. 150 ÷ 25
D. 150 – 75 E. 150 – 60

9. Mary bought a notebook for $2.29, a package of pens for $1.99, and a package of pencils for $1.50. Which expression shows how much change she will receive if she pays with a 20 dollar bill? (Assume there is no sales tax.)

A. ($2.29 + $1.99 + $1.50) – $20.00
B. $20.00 – $2.29 + $1.99 + $1.50
C. $20.00 – ($2.29 + $1.99 + $1.50)
D. $20.00 + $2.29 + $1.99 + $1.50
E. $20.00 – ($2.29 – $1.99 – $1.50)

10. Leo opened a bank account with a deposit of $750. During the week, he deposited his paycheck of $1,652.68. He also wrote a check for $800 for his rent, wrote a check for $165.97 for his cable bill, and took out $80 in cash. What is his bank balance at the end of the week?

A. $1,365.71 B. $1,436.71 C. $2,956.71 D. $1,516.71 E. $1,356.71

11. Ms. Burns bought Deluxe Game Fun Packs for all of her nieces and nephews. If she bought 15 Deluxe Game Fun Packs and spent a total of $187.50, which expression shows how much each Deluxe Game Fun Pack cost?

A. 15 ÷ $187.50
B. $187.50 + 15
C. $187.50 – 15
D. $187.50 x 15
E. $187.50 ÷ 15

12. The Sunshine Café uses an average of 16 cases of coffee each week. How many cases of coffee will they use in the next 7 ½ weeks at this same rate?

A. 120 B. 112 C. 23 ½ D. 102 E. 140

13. The power safety system at Dunham Manufacturing Co. runs all the time and is never turned off. It does a power level check 3 times per hour. Which expression shows how many power level checks are made in 1 week?

A. 3 x 60 x 7 B. 3 x 7 C. 3 x 24 ÷ 7 D. 60 ÷ 3 x 7 E. 3 x 24 x 7

14. The city of Greenville plans to build a monument in front of town hall. The city has budgeted $20,000 for the project, and the county will contribute $8,000 from its city support fund. The rest will be raised by charging admission to the unveiling ceremony for the monument. If the total amount needed for the project is $32,000 and each admission ticket costs $20, how many admission tickets must be sold to reach the $32,000 total?

A. 1,600 B. 4,200 C. 4,000 D. 200 E. 900

15. Jermaine will give 3 sales procedure packets to everyone at the staff meeting. If it costs $1.25 to print each packet, and 30 people attend the meeting, which expression shows how much it will cost to print all of the packets?

A. 30 x 3 ÷ $1.25
B. 30 x 3 x $1.25
C. 30 ÷ 3 x $1.25
D. 30 ÷ 3 ÷ $1.25
E. 30 x $1.25

LESSON THREE Counting Principle Word Problems

Counting principle word problems provide several different choices in several different categories, and ask how many different combinations are possible. These problems almost always have some form of the word "combinations" in the question, so that is a good way to recognize them.

Example 1

Rahim is going to his favorite restaurant for their Friday night special. He can choose from 3 appetizers, 5 main courses, and 4 desserts for a bargain price of $12.95. How many different meal combinations of one appetizer, one main course, and one dessert can Rahim choose?

A. 12 B. 60 C. 19 D. 24 E. 120

Determine the number of choices in each category, and multiply.

First category is appetizer, with 3 choices.
Second category is main course, with 5 choices.
Third category is dessert, with 4 choices.

Multiply 3 (appetizer) x 5 (main course) x 4 (desserts) = 3 x 5 x 4 = 60 combinations, so **answer is B. 60**.

Example 2

Sadie is buying a new car and has several choices to make. She can choose her exterior color from red, silver, blue, or white. Her interior color choices are black or sand. Finally, she must choose window tint from 20% tint, 35% tint, or no tint. How many different types of cars can Sadie choose if the car company allows buyers to combine any exterior color, interior color, and window tint?

A. 10 B. 18 C. 16 D. 24 E. 12

This is a little harder than Example 1 because you are not given the actual number of choices for each category, but must read carefully to see how many categories there are, and how many choices are in each.

First category is exterior color, with 4 choices.
Second category is interior color, with 2 choices.
Third category is window tint, with 3 choices.

Multiply 4 (ext. colors) x 2 (int. colors) x 3 (tints) = 4 x 2 x 3 = 24 types of cars, so **answer is D. 24**.

Example 3

The Sirloin Steak Special Deal at the Downtown Diner comes with 4 salad dressing choices, 6 side order choices, 4 drink choices, and 5 dessert choices. Which expression represents the number of different possible meal combinations?

A. $4 + 6 + 4 + 5$ B. $(4 \times 6) + (4 \times 5)$ C. $4 \times 6 \times 4 \times 5$
D. $4(6 + 4 + 5)$ E. $6 \times 4 \times 5$

In this problem, you are asked for an expression instead of a final answer. There are four categories, so four numbers will be multiplied.
Multiply 4 (salad dressing) x 6 (side order) x 4 (drink) x 5 (dessert), so the **answer is C. 4 x 6 x 4 x 5.**

PRACTICE – Counting Principle Word Problems

Answers – p. 33

1. Grant's furniture store offers an inexpensive couch with limited choices. Customers can pick from 6 fabrics, 3 trims, and 2 pillow styles. How many different possible ways can the fabric, trim, and pillow style choices be combined?

A. 11 B. 36 C. 20 D. 24 E. 72

2. The Pro-Line Workpad laptop comes with a choice of 3 screen sizes, 2 processors, 4 memory sizes, and 2 colors. Which expression shows how many different combinations of these features are available for purchasing a new laptop?

A. $3 + 2 + 4 + 2$ B. $(3 \times 2) + (4 \times 2)$ C. $3 \times 2 \times 4 \times 2$
D. $3(2 + 4 + 2)$ E. $3 \times 2 \times 4 + 2$

3. The Manning family is remodeling their kitchen. They can have black, white, or stainless steel appliances, and they also must decide on wall color from 12 color choices given to them by their contractor. Finally, they must choose cabinets from white laminate, natural pine, or dark stained pine. How many different types of kitchens could the Manning family choose if combination of any appliance, wall color, and cabinet is allowed by the contractor?

A. 72 B. 18 C. 48 D. 144 E. 108

4. Gomez Print Shop offers a choice of 12 card colors, 7 fonts, and 6 ink colors when they print business cards. How many different combinations of card color, font, and ink color are possible at Gomez Print Shop?

A. 504 B. 25 C. 90 D. 54 E. 405

5. Jamila is choosing classes for her first semester at college, and she must pick one course in each of four subject areas. There are 8 literature, 4 math, 6 science, and 12 history courses offered. Which expression below shows how many different combinations of literature, math, science, and history classes are possible?

A. $8 + 4 + 6 + 12$ B. $8(4 + 6 + 12)$ C. $(8 \times 4) + (6 \times 12)$
D. $8 \times 4 \times 6 \times 12$ E. $(8 \times 4) - (6 \times 12)$

6. Liza is buying a custom made wedding gown. The color can be white, peach, or cream. She can choose lace, beads, or rhinestones for the trim, and she can choose a cap sleeve or sleeveless for her sleeve style. How many different types of dresses can be made if Liza can combine any color, trim, and sleeve style?

A. 27 B. 18 C. 8 D. 36 E. 24

7. The breakfast special at a restaurant allows one choice from each of the following categories: 12 main dishes, 3 side orders, and 6 beverages. Choose an expression that shows the number of different possible combinations of main dish, side order, and beverage.

A. $12 + 3 + 6$ B. $12(3 + 6)$ C. $12 \times 3 \div 6$ D. $12 \times 3 \times 6$ E. $12 \times 3 + 6$

8. The Masters family is ready to choose the optional features for their new home. They must choose to have a small, medium, or large storage shed, and they can have 1 or 2 balconies. They also must pick a 2 or 3 car garage. How many different possible ways can the shed size, balcony number, and garage size choices be combined?

A. 12 B. 18 C. 7 D. 9 E. 8

LESSON FOUR Negative Number Word Problems

All the problems in this set involve negative numbers. If you need a review of how to work with negative numbers, see Lesson Two in the Algebra Part One Study Guide.

Some of the explanations for the example problems are quite long because they show more than one way to solve the problem. Read all the way through these explanations because you may find one way to get the answer easier to understand than another.

Tip – Use the +/– key to enter a negative number on the calculator. To enter –5, press the 5 key, then the +/– key. Don't enter the +/– key before the number, and don't use the subtraction key.

Note – Don't be confused by the way temperatures are expressed. They can be shown as degrees Celsius or degrees Fahrenheit, with the words written out or using the degree symbol. 12°F is the same as 12 degrees Fahrenheit and 3°C is the same as 3 degrees Celsius. Celsius and Fahrenheit are two different scales for measuring temperature. As long as the same scale is used throughout your problem, no conversions are needed and you can add and subtract the temperatures as regular numbers.

Note – Times are expressed as A.M. or P.M.
A.M. times are from midnight until noon.
P.M. times are from noon until midnight.

12:00 NOON and 12:00 MIDNIGHT are technically neither A.M. nor P.M. 12:00 P.M. is sometimes used for noon, and 12:00 A.M. is sometimes used for midnight, but in these problems, the word noon or midnight will be written out.

Example 1 – Calculate the Amount of Temperature Change

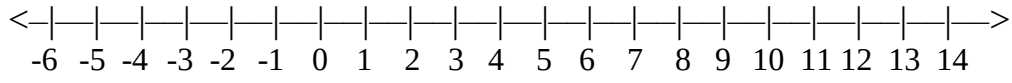
Brittany checked the temperature at 11:00 P.M. before she went to bed, and the thermometer read –3°F. She checked again at 9:30 A.M. the next morning, and the thermometer read 12°F. How many °F had the temperature increased overnight?

A. 9 B. 4 C. 12 D. 15 E. 10

Subtract the low from the high to get the amount of temperature increase.
12° – (–3°) = 15°, so the **answer is D. 15.**

OR, visualize the amount of increase on a thermometer or number line. Move 3 spaces to get from the starting point of –3° up to 0°, and 12 more spaces to get from 0° to the ending point of 12°, for a total of 3 + 12 = 15 spaces moved.

|——— 15 spaces from –3 to 12 ————|



Example 2 – Calculate an Ending Temperature

The temperature in Acton was 8° Celsius at 11:00 P.M., and was expected to go down through the night at an average rate of 2° Celsius per hour. Assuming the prediction was right, what was the temperature in °Celsius in Acton at 6:00 A.M.?

A. 14 B. –14 C. –6 D. 6 E. 10

Start with 8° Celsius at 11:00 P.M. and go down 2 degrees each hour until you get to 6:00 A.M. Write out a list, making sure to subtract 2 degrees each hour.

11:00 P.M.	8°
12:00 MIDNIGHT	6°
1:00 A.M.	4°
2:00 A.M.	2°
3:00 A.M.	0°
4:00 A.M.	–2°
5:00 A.M.	–4°
6:00 A.M.	–6°

so the **answer is C. –6.**

OR, here is a more traditional mathematical solution.

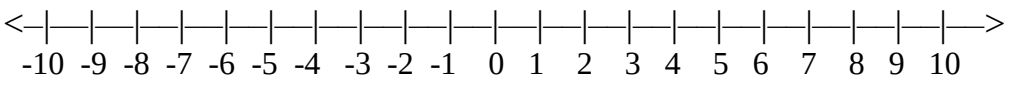
Step 1 Determine how many hours there are between 11:00 P.M. and 6:00 A.M.
Think of a clock, where it is 1 hour from 11:00 P.M. until 12:00 MIDNIGHT, and then 6 more hours from 12:00 MIDNIGHT until 6:00 A.M., for a total of 7 hours.
You can also count on your fingers. Start at 11:00 P.M. until 12:00 MIDNIGHT as 1 hour, and then count 1 finger for each hour until you get to 6:00 A.M., for a total of 7 hours.

Step 2 Calculate how many degrees the temperature fell. The time period is 7 hours (from Step 1) and the rate is 2° each hour (given in the problem), so 7 x 2° = 14°.

Step 3 Start with the beginning 8° temperature, and subtract 14°.
8° – 14° = –6°, so the **answer is C. –6.**

Once you know you have to move 14 degrees lower than the 8°C starting temperature, you can visualize what this looks like by drawing or thinking of a thermometer. On a thermometer, go down 8 degrees to get from the starting point to 0°C. You know you have to go down a total of 14 degrees, so continue down 6 degrees further which brings you to the same answer, **–6°C**.
Similarly, you can think of a number line (which is just like a horizontal thermometer). Start at 8 and go 14 spaces to the left to account for the 14 degree drop in temperature, ending up at –6.

|————14 spaces left of 8 to –6 ————|



Example 3 – Calculate the Rate of Temperature Change

The temperature in Rye was –5°F at 7:00 A.M., and rose to 7°F by 3:00 P.M. that afternoon. What was the average temperature increase per hour in °F between 7:00 A.M. and 3:00 P.M.?

A. 1 B. 1.5 C. 2 D. 2.5 E. 3

Step 1 Calculate how many degrees the temperature rose.
Subtract high temperature minus low temperature. 7° – (–5°) = **12°**.

You can also visualize a thermometer or number line. If you start at –5°F, you need to move 5 degrees to get up to 0°F, and then move 7 more degrees to get to the ending temperature of 7°F, for a total of 5 + 7 = 12 degrees moved.

Step 2 Determine how many hours are between 7:00 A.M. and 3:00 P.M.
Think of a clock where it is 5 hours from 7:00 A.M. until 12:00 NOON, and then 3 more hours from 12:00 NOON until 3:00 P.M., for a total of **8 hours**.

You can also count on your fingers. Start at 7:00 A.M. until 8:00 A.M. as 1 hour, and then count 1 finger for each hour until 3:00 P.M., for a total of 8 hours.

Step 3 Divide the number of degrees the temperature increased by the number of hours to get the average temperature increase per hour.
12° ÷ 8 = 1.5°, so the **answer is B. 1.5**

How do you know if it's 12° ÷ 8 or 8 ÷ 12°?
You are calculating "degrees" "per" "hour." Think of per as a division sign, and each piece of this phrase as part of a division problem.
degrees per hour → number of degrees ÷ number of hours → 12° ÷ 8

OR, here is another way to do this type of problem.
Use the trial and error method with the answer choices that are given.
Start with –5°F at 7:00 A.M., and test each answer until you find the one that brings you to the desired ending temperature of 7F° at 3:00 P.M.

Try A. 1° increase per hour

7:00 A.M.	–5°
8:00 A.M.	–4°
9:00 A.M.	–3°
10:00 A.M.	–2°
11:00 A.M.	–1°
12:00 NOON	0°
1:00 P.M.	1°
2:00 P.M.	2°
3:00 P.M.	3°

It is not 7° at 3:00 P.M.
A. 1° is not correct.

Try B. 1.5° increase per hour

7:00 A.M.	–5°
8:00 A.M.	–3.5°
9:00 A.M.	–2°
10:00 A.M.	–0.5°
11:00 A.M.	1°
12:00 NOON	2.5°
1:00 P.M.	4°
2:00 P.M.	5.5°
3:00 P.M.	7°

It is 7° at 3:00 P.M.
B. 1.5° is correct.

Example 4 – Calculate the Difference Between a High and a Low Temperature

Temperature records for Fairbanks, Alaska show that in 2016 the high temperature was 35 degrees Fahrenheit, and the low temperature was –20 degrees Fahrenheit. What is the difference in °F between the high and the low temperatures?

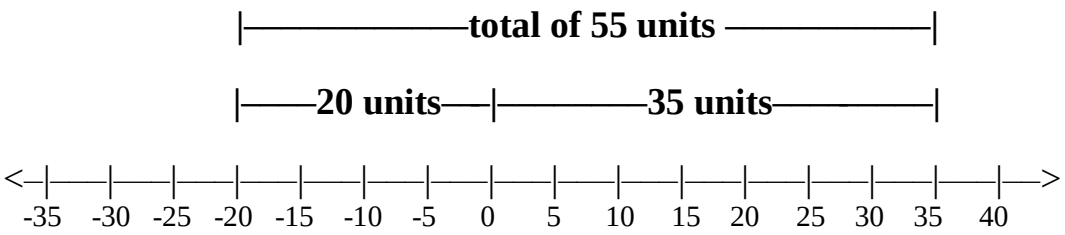
A. 15 B. 18 C. 65 D. 55 E. 56

Subtract the low from the high to get the difference between the two temperatures. 35° – (–20°) = 55°, so the **answer is D. 55.**

OR

Think of the difference between the two temperatures as the distance you would have to travel on a thermometer or a number line to get from the low temperature to the high temperature.

To get from –20 to 0 you'd have to travel 20 units up (on a thermometer) or to the right (on a number line), and then to get from 0 to 35, you'd have to travel 35 more units up or to the right, for a total of 20 + 35 = 55 units traveled.



Example 5 – Calculate the Distance Between a High and a Low Point

The highest point at Red Rock Recreational center is the top of Tremont Hill which is 450 feet above sea level. The lowest point is Explorer Cave, an underwater cave that is 65 feet below sea level. What is the difference in height between Tremont Hill and Explorer Cave?

A. 385 ft. B. 551 ft. C. 358 ft. D. 525 ft. E. 515 ft.

In problems that refer to places above sea level and below sea level, think of sea level as 0 on a number line. The heights above sea level are positive numbers to the right of 0 and the heights below sea level are negative numbers to the left of 0.

To get the difference in height, subtract the low point from the high point.
450 ft. – (–65 ft.) = 515 ft., so the **answer is E. 515 ft**.

OR

Think of traveling 65 feet up from Explorer Cave to get to sea level, and then traveling 450 feet further to get to the top of Tremont Hill. Total distance traveled between the two points is 65 ft. + 450 ft. = **515 ft.**

PRACTICE – Negative Number Word Problems

Answers – p. 34

1. The temperature on Louisa's backyard thermometer was 19°F at 8:00 A.M., and when she checked again at 6:00 P.M., the temperature had gone down to –11°F. What was the average temperature decrease per hour in °F between 8:00 A.M. and 6:00 P.M.?
A. 8 B. 2 C. 3 D. 30 E. 10

2. The temperature was –3°F when Alisa woke up at 6:00 A.M., and was expected to increase by a rate of 2°F per hour during the day. What is the predicted temperature in °F at 3:00 P.M. that afternoon?
A. 9 B. 15 C. –15 D. 12 E. 5

3. Mount Findley is 16,520 feet above sea level and Stanhope Valley is 195 feet below sea level. What is the difference in height between Mount Findley and Stanhope Valley? (Hint: think of sea level as 0 feet.)
A. 16,325 ft. B. 16,000 ft. C. 16,517 ft. D. 15,715 ft. E. 16,715 ft.

4. At 10:00 P.M. the temperature in Buffalo was –6°F. By 10:00 A.M. the temperature had risen to 8°F. How many degrees Fahrenheit did the temperature rise overnight?
A. 14 B. 2 C. 12 D. 15 E. 5

5. The lowest point of Sandy Shoal State Park is 75 feet below sea level, and the highest point is 900 feet above sea level. What is the difference in height between the highest and lowest points?
A. 825 ft. B. 957 ft. C. 852 ft. D. 975 ft. E. 850 ft.

6. The temperature in Boone was –2°C at 5:00 A.M. and had risen to 8°C by 3:00 P.M. What was the per hour rate of temperature increase in °C from 5:00 A.M. to 3:00 P.M.?
A. 10 B. 1 C. 1.5 D. 2 E. 6

7. A science experiment predicted that a beaker of chemical solution would decrease in temperature by a rate of 2 degrees Celsius per hour. The temperature was 12 degrees Celsius at 10:00 A.M. If the prediction was correct, what was the temperature in degrees Celsius at 7:00 P.M.?
A. 12 B. –6 C. 6 D. 9 E. 10

8. Mr. Ahmed's science class sampled the temperatures of many chemical solutions under different experimental conditions. The highest temperature found was 68°F and the lowest temperature found was –18°F. What was the range of temperatures sampled in °F?
A. 86 B. 40 C. 50 D. 68 E. 85

9. The temperature in Natick is 15 degrees Fahrenheit at 10:00 P.M., and is predicted to decrease by an average of 2.5 degrees Fahrenheit per hour through the night. What temperature should you expect to find at 6:00 A.M. in degrees Fahrenheit?
A. 5 B. –20 C. 20 D. 6 E. –5

10. Jackie's class recorded temperatures at 9:00 A.M. every school day for the entire school year. The highest temperature was 25 degrees Celsius and the lowest temperature was –12 degrees Celsius. What was the range between the highest and lowest temperature in degrees Celsius?
A. 13 B. 31 C. 37 D. 73 E. 38

11. The temperature in a city decreased from 16°F at 6:00 P.M. to –6°F at 5:00 A.M. the next morning. What was the average rate of temperature decrease per hour in °F between 6:00 P.M. and 5:00 A.M.?
A. 1 B. 2.5 C. 2 D. 10 E. 1.5

12. The temperature in Dover is –4 degrees Fahrenheit at 4:00 A.M. and is expected to rise at a rate of 3 degrees Fahrenheit per hour through the day. What do you predict the temperature will be at 2:00 P.M. in degrees Fahrenheit?
A. 34 B. 30 C. 26 D. –30 E. –26

13. The temperature of a chemical solution was –4°C at 9:00 P.M. when Leo left his laboratory. When he returned at 6:00 A.M. the temperature had risen to 14°C. What was the average hourly temperature increase in °C between 9:00 P.M. and 6:00 A.M.?
A. 1.5 B. 2 C. 1 D. 10 E. 18

WORD PROLEMS PART ONE TEST *Answers – p. 43*

1. Mike's cell phone plan charges $32.50 per month. It includes unlimited texts and the first 60 phone calls are also included in the monthly charge. Any additional phone calls are billed at 7¢ per call. Which of the following expressions represents his cell phone bill in a month where Mike makes 75 phone calls?

A. $32.50 + ($0.70)(15) B. $32.50 + ($0.07 x 75) C. $32.50 + 60
D. $32.50 + ($0.07)(15) E. $32.50 + ($0.07 x 60)

2. The telephone company charges a monthly fee of $45 which includes unlimited local calls and 25 long distance calls. Additional long distance calls are billed at 59¢ per call. If Bob makes 48 local calls and 45 long distance calls, what is his monthly bill?

A. $59.75 B. $71.55 C. $73.32 D. $45.59 E. $56.80

3. The Paper Mart offers a rebate of $1.50 per case for half of the cases of copy paper that a company buys during the year. How much of a rebate can a company get if it purchased 440 cases of paper last year?

A. $330 B. $660 C. $303 D. $220 E. $333

4. The temperature was –5°F when Jeannie woke up at 5:00 A.M., and the weather report predicted an increase of 2°F per hour during the day. What temperature in °F should Jeannie expect to find at 2:00 P.M. that afternoon?

A. –13 B. 13 C. –15 D. 15 E. 10

5. The machine at Speedy Car Wash can wash 12 cars per hour. Speedy Car Wash is open 9 hours per day and 6 days per week. Which expression shows the maximum number of cars that could be washed in 1 week?

A. 12 x 9 + 6 B. 12 + 9 + 6 C. (12 x 9) ÷ 6 D. 12 + 9 x 6 E. 12 x 9 x 6

6. To rent a car it costs $18 per day and 12 cents for every mile driven over 250 miles. If Mateo rents a car for 6 days and drives 625 miles, which of the following expressions show how much it will cost to rent the car?

A. $18 x 6 + $12 x (625 – 250) B. $18 x 6 + $0.12 x (625 – 250)
C. $18 x 6 + (625 – 250) D. $18 + 6 x 250 E. $18 x 6 + 625 x $0.12

7. Aisha can buy a home entertainment system for $2,650 cash, or she can make payments of $130 per month for 2 years. Which expression shows how much she will save by paying cash?

A. ($130 x 24) – $2,650 B. $2,650 – ($130 x 24) C. $2,650 – ($130 x 12)
D. ($130 x 2) – $2,650 E. ($2,650 – $130) x 24

8. Sarah made 64 cakes to sell in her bake shop at a cost of $3.25 in ingredients for each cake. How many cakes will she need to sell at $16 each in order to cover the cost of ingredients for all 64 cakes?

A. 20 B. 208 C. 16 D. 13 E. 31

9. Leon spent a total of $450 on new dinner plates for his restaurant. If each plate cost $3, how many plates did he buy?

A. 1,350 B. 510 C. 150 D. 105 E. 453

10. Liza is ordering advertising posters for her company. She can choose 2, 3, or 4 color printing, matte or glossy finish, and 2, 4, or 6 square feet for the size. If any combination of color number, finish, and size can be ordered, how many different styles of posters could Liza choose for her company?

A. 27 B. 18 C. 8 D. 36 E. 24

11. At the Signal Mountain observatory tower, the temperature was 14°F at 9:00 A.M., and by 5:00 P.M. it had fallen to –10°F. What was the average temperature decrease per hour in °F between 9:00 A.M. and 5:00 P.M.?

A. 2 B. 1 C. 3 D. 4 E. 24

12. Robert buys an average of 11 pounds of chicken every week. How many pounds of chicken will he buy over the next 9 ½ weeks at this same rate?

A. 20 ½ B. 140 ½ C. 144 ½ D. 140 E. 104 ½

13. Andrew can clean and peel 4 shrimp per minute at his restaurant job. How many shrimp can he clean and peel in 5 days if he spends 2 hours per day at this task?

A. 240 B. 480 C. 2,400 D. 40 E. 1,200

14. At Byron Sub Shop customers can choose from 4 kinds of bread, 12 kinds of meat, and 5 kinds of cheese. Choose an expression that shows the number of different possible combinations of one bread, one meat, and one cheese.

A. 4 x 12 x 5 B. 4(12+ 5) C. (4 +12)(5) D. 4 + 12 + 5 E. 4 x 12 + 5

15. Angela is buying 20 desk lamps for her office. Deluxe style lamps are $39.99 each, and Economy style lamps are $28.99 each. Which expression shows how much she will save by choosing the less expensive lamp style?

A. 20($39.99 + $28.99) B. $28.99 x 20 + $39.99
C. ($39.99 x 20) – ($28.99 x 20) D. ($39.99 x 20) + ($28.99 x 20)
E. ($39.99 + 20) – ($28.99 + 20)

16. Bridal Bliss pays their salespeople a $19 commission per dress for the first 55 wedding dresses sold each month. The commission per dress for any additional dresses sold beyond 55 is 2 times the rate of the first 55 dresses. If a salesperson sells 75 dresses in a month, how much commission will be earned?

A. $1,805 B. $1,425 C. $1,045 D. $3,895 E. $1,850

17. Lisa bought a bottle of shampoo for $2.99, a box of tissues for $1.29, and a hairbrush for $7.99. Which expression shows how much change she will receive if she pays with a 20 dollar bill? (Assume there is no sales tax.)

A. ($2.99 + $1.29 + $7.99) – $20.00 B. $20.00 – $2.99 + $1.29 + $7.99
C. $20.00 – ($2.99 + $1.29 + $7.99) D. $20.00 + $2.99 + $1.29 + $7.99
E. $20.00 – ($2.99 – $1.29 – $7.99)

18. Nelson opened a bank account with a deposit of $950. During the week, he deposited his paycheck of $1,495.63, and he wrote two checks: $42.74 for his phone bill, and $115.69 for his cable bill. He also got $30 from the ATM machine on Monday and another $25 on Friday. What is his bank balance at the end of the week?

A. $1,282.20 B. $2,322.20 C. $2,287.20 D. $2,257.20 E. $2,232.20

19. The Belmont High School band needs to raise money for the annual band trip. So far, they have donations of $2,000, and the school will contribute $4,000 from its budget. The rest will be raised by selling tickets to a band concert. The total amount needed for the trip is $7,500. If each concert ticket costs $10, how many tickets must be sold to reach the $7,500 total?

A. 1,500 B. 105 C. 750 D. 150 E. 200

20. Joe earns $900 base pay plus a $100 commission per car for the first 10 cars he sells each month. Any additional cars he sells earn him a commission rate that is 1.5 times the rate for the first 10 cars. How much will Joe earn in a month where he sells 14 cars?

A. $2,300 B. $2,500 C. $1,900 D. $2,400 E. $2,600

21. The 45 employees of a restaurant were all given 3 new uniform shirts. If each shirt cost $8.75, which expression shows how much it cost to purchase all of the shirts?

A. 45 x 3 ÷ $8.75 B. 45 x 3 x $8.75 C. 45 ÷ 3 x $8.75
D. 45 ÷ 3 ÷ $8.75 E. 45 x $8.75

22. Outside temperature was recorded at Statesville Municipal Airport at 6:00 A.M. every day for the entire year. The highest temperature was 32 degrees Celsius and the lowest temperature was –18 degrees Celsius. What was the range between the highest temperature and the lowest temperature in degrees Celsius?

A. 50 B. 14 C. 55 D. 15 E. 51

ANSWERS – Mixed Word Problems Set One *(page 3)*

1. The telephone company charges a monthly fee of $26.75 plus 7 cents for every phone call made. If 39 phone calls are made in a month, how much will the telephone bill be?

A. $299.75 **B. $29.48** C. $65.75 D. $33.75 E. $187.25

Add together the monthly charge and the cost for phone calls made.
Monthly charge is $26.75.
Cost for the phone calls made is 39 calls times 7 cents per call. 39 x $0.07 = $2.73.
$26.75 + $2.73 = $29.48, so **ANSWER IS B. $29.48.**

2. Juan's cell phone plan charges $38.50 per month, which includes unlimited texts and 50 phone calls. Any additional phone calls are billed at 22¢ per call. Which of the following expressions represents his cell phone bill in a month where Juan makes 68 phone calls?

A. $38.50 + ($0.22)(68) B. $38.50 + 50 C. $38.50 + ($22)(18)
D. $38.50 + ($0.22)(18) E. 50 x $0.22

Add together the cost for the monthly charge and the cost for the additional phone calls.
Monthly charge is **$38.50**.
There are 68 total phone calls and 50 of the calls are free. 68 – 50 = 18, so 18 phone calls will be charged.
Each of these 18 calls is charged at 22¢ per call, so that will be **($0.22)(18)**.
Add together, so **ANSWER IS D. $38.50 + ($0.22)(18).**

3. Janel purchased a laptop computer on a credit plan. Her payments are $30 per month for 2 years. Mark bought the same laptop, paying $600 cash. By paying cash, how much money did Mark save?

A. $720 B. $540 C. $570 D. $630 **E. $120**

Calculate the total that Janel will pay, and then subtract the $600 that Mark paid.
Janel pays $30 per month for 24 months, so $30 x 24 = $720.
$720 – $600 = $120, so **ANSWER is E. $120.**

4. Life insurance salespeople earn a base pay of $900 per month plus a $50 commission for each policy sold. Which expression represents the total monthly pay for a salesman who sells 22 policies in a month?

A. $900 + $50 **B. $900 + ($50)(22)** C. 22($900 + $50)
D. (22)($900) + $50 E. ($950)(22)

Add together base pay plus commission pay.
Base pay is $900.
Commission is $50 x 22 policies, so **ANSWER is B. $900 + ($50)(22).**

5. Lenore is renting a car that costs $18 per day plus 10¢ for each mile driven. How much will she pay if she rents the car for 5 days and drives 250 miles?

A. $115 B. $90 C. $43 D. $268 E. $278

Add together the cost for the number of days and the cost for the miles.
Cost for days is $18 x 5 days = $90.
Cost for miles is $0.10 x 250 miles = $25.
$90 + $25 = $115 so **ANSWER is A. $115.**

6. One cell phone plan has a base charge of $42 per month, which includes 300 minutes. All minutes used after the first 300 are charged 2 cents per minute. Which expression shows what the bill is in a month where 750 minutes are used?

A. $42 + $0.02(750 – 300) B. $42 + $2(750 – 300) C. $42 + $2(750)
D. $42 + $0.02(750) E. $42 + (750 – 300)

Add together the charge for minutes used and the $42 per month charge.
The 2 cents per minute charge is for minutes over 300, so it applies to 750 – 300 minutes, so the minutes used charge is $0.02(750 – 300).
Add to the $42 monthly charge, so **ANSWER is A. $42 + $0.02(750 – 300).**

7. The telephone company charges a monthly fee of $60 which includes unlimited local calls and 10 long distance calls. Additional long distance calls are billed at 75¢ per call. If Sue makes 48 local calls and 15 long distance calls, what is her bill for the month?

A. $71.25 B. $67.50 C. $96.00 D. $75.00 **E. $63.75**

Add together the monthly fee + cost of local calls + cost of long distance calls.
Monthly fee = **$60**.
Cost of local calls = **$0**, because the monthly fee includes unlimited local calls.
Cost of long distance calls is 5 calls x $0.75 = **$3.75**.

10 long distance calls are included in the monthly fee, so 15 total long distance calls – 10 free long distance calls = 5 long distance calls that are charged the $0.75 fee.

$60 + $0 + $3.75 = $63.75, so **ANSWER is E. $63.75.**

8. To rent a car it costs $35 per day and 15 cents per mile for every mile driven over 300 miles. If Sinya rents a car for 4 days and drives 500 miles, which expression shows how much will it cost to rent the car?

A. $35 x 4 + $15 x 200 **B. $35 x 4 + $0.15 x 200**
C. $35 x 4 + 200 D. $35 + 4 x 500 E. $35 + 300 x $0.15

Add together the rental charge and the mileage charge.
Rental charge is $35 x 4 days, or **$35 x 4**.
Miles charged are only the miles over the 300 free miles, so, 500 – 300 = 200 miles.
These miles are charged 15 cents each, so mileage charge is **$0.15 x 200**.
Add the two charges together, so **ANSWER is B. $35 x 4 + $0.15 x 200.**

9. Car salespeople earn $1,200 per month plus a $365 commission for every car they sell. If Diane sold 4 cars last month, what were her total earnings?

A. $1,565 B. $5,165 **C. $2,660** D. $1,569 E. $4,800

Calculate commission earned and add it to the $1,200 per month.
Commission earned = $365 x 4 cars = $1,460.
$1,200 + $1,460 = $2,660, so **ANSWER is C. $2,660.**

10. Mr. Boden can buy a washer and dryer for $1,650 cash, or he can make payments of $85 per month for 2 years. Which expression shows how much he will save by paying cash?

A. ($85 x 24) – $1,650 B. $1,650 – ($85 x 24) C. ($85 x 2) – $1,650
D. $85 + 24 – $1,650 E. ($1,650 – $85) x 24

Calculate the total cost of the payment plan, and then subtract the cash price.
Payment plan cost is $85 x 24 months.
Cash price is $1,650.
ANSWER is A. ($85 x 24) – $1,650.

Note that you subtract the lower price from the higher price, which is answer A, not the other way around, which is answer B.
The amount of money saved is a positive number, not a negative number. If you are trying to decide between answers A and B, calculate both and choose the one that gives a positive answer.

11. Tisha is buying tile to redo her kitchen and dining room floors. Desert Rose tile costs $12 per square foot, and Tawny Dream tile costs $10 per square foot. If she needs 250 square feet of tile, which expression shows how much will she save by choosing the less expensive tile?

A. 250($12 + $10) B. $12 x 250 + $10 **C. ($12 x 250) – ($10 x 250)**
D. 250 + $12 + $10 E. ($12 + 250) – ($10 + 250)

Calculate the cost for both types of tile, then subtract the lower cost from the higher cost.
Cost using Desert Rose tile is $12 x 250.
Cost using Tawny Dream tile is $10 x 250.
ANSWER is C. ($12 x 250) – ($10 x 250).

12. At Couches Unlimited, the first 12 couches sold in a month earn a salesperson a $50 commission per couch. If any couches over 12 are sold during the month, those couches earn a commission per couch that is 2 times the commission rate for the first 12 couches. If Jay sold 18 couches in March, what was his commission in March?

A. $1,200 B. $900 C. $2,400 D. $1,800 E. $600

Calculate separately the commission for the first 12 couches, and the commission for the rest of the couches, and then add the two commissions together.

1. Commission for the first 12 couches is $50 per couch, so $50 x 12 = **$600**.
2. Commission for the rest of the couches is at 2 times the first rate, or 2 x $50 = $100 per couch. There are 18 – 12 = 6 couches at this rate, and $100 x 6 = **$600**.

Add together both commissions. $600 + $600 = $1,200 so **ANSWER is A. $1,200.**

13. Angelo can buy a computer for $700 cash. He can also buy it using the store credit plan where he will have to make a $200 down payment, and pay $100 per month for 6 months. How much can Angelo save if he chooses to pay cash?

A. $800 B. $300 C. $400 D. $500 **E. $100**

Calculate the higher payment plan price, and subtract the lower cash price.
Cost using payment plan is $200 + (6 x $100) = $800.
Cash price is $700.
$800 – $700 = $100, so **ANSWER is E. $100.**

14. Lenore earns $700 base pay plus a $50 commission per sale for the first 18 alarm systems that she sells each month. Any alarm systems beyond 18 that she sells earn her a commission rate that is 1.5 times the rate for the first 18 alarm systems. How much will Lenore earn in a month where she sells 26 alarm systems?

A. $2,000 **B. $2,200** C. $750 D. $1,600 E. $1,402

Calculate separately then add together three pieces: base pay, commission on the first 18 alarms systems sold, and commission on the rest of the alarm systems sold.

1. Base pay = **$700**.
2. Commission on the first 18 alarm systems is $50 each, and $50 x 18 = **$900**.
3. Commission rate for the rest of the alarm systems is 1.5 times the first rate, or 1.5 x $50 = $75 each.
   The alarm systems that get this rate are the total sold minus the 18 already accounted for, or 26 – 18 = 8.
   Commission on these alarm systems is $75 x 8 = **$600**.

Add together the three pieces. $700 + $900 + $600 = $2,200, so
ANSWER is B. $2,200.

15. Elisa is having some dental work done, and she can either use the credit plan offered by her dentist, or she can pay $1,500 cash. With the credit plan, she will make a $300 down payment and pay $50 per month for 3 years. How much more will she pay in total if she uses the credit plan instead of paying cash?

A. $1,800 B. $2,100 **C. $600** D. $450 E. $300

Calculate the total paid using the credit plan, and subtract the $1,500 cash price.
Credit plan cost is $300 + $50 x 36 months = $2,100.
$2,100 – $1,500 = **$600,** so **ANSWER is C. $600.**

ANSWERS – Mixed Word Problems Set Two *(page 9)*

1. For a charity's fundraising drive, a local business will give $25 for every donation the charity gets from a first time donor. If 420 donations were received, and half of these were from first time donors, how much will the local business give the charity?

A. $5,250 B. $10,500 C. $5,520 D. $445 E. $990

Calculate the number of first time donors, and multiply by $25 to get the amount the local business will give the charity.
First time donors are half of all the donations, so 420 x ½ = 210 first time donors.
210 x $25 = $5,250 so **ANSWER is A. $5,250.**

2. Falice works at her company's computer help desk, and answers 3 calls per hour. If she works 8 hours per day and 5 days per week, which expression shows how many calls she will answer in 1 week?

A. 3 x 8 + 5 B. 8 x 5 – 3 C. (3 x 8) ÷ 5 D. 3 + 8 x 5 **E. 3 x 8 x 5**

You are given 3 calls per hour.
First calculate calls per day. Multiply by 8 hours per day. 3 x 8
Then calculate calls per week. Multiply by 5 days per week. 3 x 8 x 5
ANSWER is E. 3 x 8 x 5.

3. Sue has printed 300 copies of her new Guide To Healthy Cooking at a cost of $1.25 per copy. If she sells them for $15 each, how many copies does she need to sell to cover the total cost of printing the 300 copies?

A. 15 B. 20 **C. 25** D. 36 E. 35

Calculate the cost of printing 300 copies, and divide by $15 to see how many books must be sold to cover the cost of the printing.
Cost of printing is 300 x $1.25 = $375.
$375 ÷ $15 = 25, so **ANSWER is C. 25.**

OR, if you know that you need $375, but don't know what to do next, you can use trial and error to see how many copies must be sold to generate $375.

Try A. 15	Does 15 copies x $15 = $375?	No, it is $225, so 15 copies is not the answer. It is too low.
Try B. 20	Does 20 copies x $15 = $375?	No, it is $300, so 20 copies is not the answer. It is too low.
Try C. 25	Does 25 copies x $15 = $375?	Yes, it does, so 25 copies is the right answer.

4. LaShawn's Bookmobile started the week with 3,262 books. On Monday 62 books were checked out and 27 books were returned. On Tuesday 32 books were checked out and 45 books were returned. Which expression shows how many books were in the Bookmobile at the end of the day Tuesday?

A. 3,262 + 62 – 27 + 32 – 27 **B. 3,262 – 62 + 27 – 32 + 45**
C. 3,622 – 62 + 27 – 32 + 45 D. 3,262 + (62 – 27) + (45 – 32)
E. 3,262 – (62 – 27) – (45 – 32)

Start with 3,262 books, subtract the books checked out, and add the books returned, so **ANSWER is B. 3,262 – 62 + 27 – 32 + 45.**

5. For every TV that he sells, Ace Electronics pays Charlie a $15 commission. If his commission check was $525, how many TVs did he sell?

A. 7,875 **B. 35** C. 2,625 D. 105 E. 36

Divide the total earned by the amount earned per TV to get the number of TVs.
$525 ÷ $15 = 35, so **ANSWER is B. 35.**

OR, set up a proportion. $\frac{\text{Commission}}{\text{\# of TVs}} \quad \frac{\$15}{1} = \frac{\$525}{?}$ $525 x 1 ÷ $15 = **35**

OR, you can use trial and error to solve the problem.

Try A. 7,875	Does $15 x 7,875 TVs = $525?	No, it is $118,125, which is way too much.
Try B. 35	Does $15 x 35 TVs = $525?	Yes, it does equal $525, so 35 is the correct number of TVs.

6. On average, Ben and his crew can paint 8 houses per month. About how many houses can they paint over the next 6 ½ months if they continue at the same rate?

A. 14 ½ B. 25 C. 45 ½ **D. 52** E. 48

Multiply 8 houses per month times 6 ½ months.
8 x 6 ½ = 52 so **ANSWER is D. 52.**

Note – Enter 6 ½ on the calculator as 6.5 or as 6 abc 1 abc 2.

7. Alonzo spends 4 hours per day entering deposit tickets. If he can enter 16 deposit tickets per minute, how many deposit tickets can he enter in 3 days?

A. 192 B. 3,840 **C. 11,520** D. 11,250 E. 1,280

You are given 16 tickets entered per minute.

First calculate the number of tickets he can enter in 1 hour.
16 tickets per minute x 60 minutes per hour = 960 tickets in 1 hour.

Next calculate how many tickets he can enter in 1 day.
960 tickets per hour x 4 hours per day = 3,840 tickets in 1 day.

Then calculate how many tickets he can enter in 3 days.
3,840 tickets per day x 3 days = 11,520 tickets in 3 days.
ANSWER is C. 11,520.

8. SueAnne needs to make a total of 150 wedding favors. She has already made 60 favors, and will make another 15 by the end of the day. If she can make 25 favors per day, which expression shows how many more days after today it will take her to finish making all the favors?

A. (150 – 60 – 15) ÷ 25 B. 25 ÷ (150 – 60 – 15) C. 150 ÷ 25
D. 150 – 75 E. 150 – 60

Calculate how many favors she will have left to make at the end of the day, and divide by 25 favors per day to see how many days it will take.
Favors left to make is (150 – 60 – 15). Divide this total by 25.
ANSWER is A. (150 – 60 – 15) ÷ 25.

9. Mary bought a notebook for $2.29, a package of pens for $1.99, and a package of pencils for $1.50. Which expression shows how much change she will receive if she pays with a 20 dollar bill? (Assume there is no sales tax.)

A. ($2.29 + $1.99 + $1.50) – $20.00 B. $20.00 – $2.29 + $1.99 + $1.50
C. $20.00 – ($2.29 + $1.99 + $1.50) D. $20.00 + $2.29 + $1.99 + $1.50
E. $20.00 – ($2.29 – $1.99 – $1.50)

Subtract all of the expenses from $20. To do this, add up the expenses, put them in parentheses, and subtract from $20.
The expenses are ($2.29 + $1.99 + $1.50), so **ANSWER is**
C. $20.00 – ($2.29 + $1.99 + $1.50).
The correct answer could also be expressed as $20.00 – $2.29 – $1.99 – $1.50.

Note: the minus sign in front of the parentheses means to subtract everything that is inside the parentheses. Answer E is not correct, because it says to subtract $2.29, –$1.99, and –$1.50 instead of subtracting $2.29, $1.99, and $1.50.

Note: answer A is not correct because it subtracts $20 from the expenses instead of subtracting the expenses from $20.

10. Leo opened a bank account with a deposit of $750. During the week, he deposited his paycheck of $1,652.68. He also wrote a check for $800 for his rent, wrote a check for $165.97 for his cable bill, and took out $80 in cash. What is his bank balance at the end of the week?

A. $1,365.71 B. $1,436.71 C. $2,956.71 D. $1,516.71 **E. $1,356.71**

Start with the opening balance, subtract checks and cash taken out, and add checks and cash deposited.
$750 + $1,652.68 – $800 – $165.97 – $80 = $1,356.71 so **ANSWER is E. $1,356.71.**

Common mistakes with this type of problem are to leave out one of the numbers, or to enter the numbers incorrectly on the calculator.

11. Ms. Burns bought Deluxe Game Fun Packs for all of her nieces and nephews. If she bought 15 Deluxe Game Fun Packs and spent a total of $187.50, which expression shows how much each Deluxe Game Fun Pack cost?

A. 15 ÷ $187.50 B. $187.50 + 15 C. $187.50 – 15
D. $187.50 x 15 **E. $187.50 ÷ 15**

Divide the total spent by the number of items to get the cost of each item, so **ANSWER is E. $187.50 ÷ 15.**

12. The Sunshine Café uses an average of 16 cases of coffee each week. How many cases of coffee will they use in the next 7 ½ weeks at this same rate?

A. 120 B. 112 C. 23 ½ D. 102 E. 140

Multiply the number of cases used each week times the number of weeks.
16 x 7 ½ = 120 so **ANSWER is A. 120.**

Note – Enter 7 ½ on the calculator as 7.5 or as 7 abc 1 abc 2.

13. The power safety system at Dunham Manufacturing Co. runs all the time and is never turned off. It does a power level check 3 times per hour. Which expression shows how many power level checks are made in 1 week?

A. 3 x 60 x 7 B. 3 x 7 C. 3 x 24 ÷ 7 D. 60 ÷ 3 x 7 **E. 3 x 24 x 7**

You are given 3 checks per hour.
First calculate checks per day. Multiply by 24 hours per day. 3 x 24
Then calculate checks per week. Multiply by 7 days per week. 3 x 24 x 7
ANSWER is E. 3 x 24 x 7.

Note – the system is never turned off, so use 24 hours per day and 7 days per week.

14. The city of Greenville plans to build a monument in front of town hall. The city has budgeted $20,000 for the project, and the county will contribute $8,000 from its city support fund. The rest will be raised by charging admission to the unveiling ceremony for the monument. If the total amount needed for the project is $32,000 and each admission ticket costs $20, how many admission tickets must be sold to reach the $32,000 total?

A. 1,600 B. 4,200 C. 4,000 **D. 200** E. 900

First calculate how much money still has to be raised, then divide by $20 to see how many tickets need to be sold to raise that amount of money.
They need $32,000 total, and they have $28,000 so far, so they still need
$32,000 – $28,000 = $4,000.
$4,000 ÷ $20 = 200 so **ANSWER is D. 200.**

15. Jermaine will give 3 sales procedure packets to everyone at the staff meeting. If it costs $1.25 to print each packet, and 30 people attend the meeting, which expression shows how much it will cost to print all of the packets?

A. 30 x 3 ÷ $1.25 **B. 30 x 3 x $1.25** C. 30 ÷ 3 x $1.25
D. 30 ÷ 3 ÷ $1.25 E. 30 x $1.25

Calculate the total number of packets needed, then multiply by the cost to print each packet.
There are 30 people, and each person gets 3 packets, so 30 x 3 packets are needed.
Then multiply by the $1.25 cost of each packet, so **ANSWER is B. 30 x 3 x $1.25.**

ANSWERS – Counting Principle Word Problems *(page 12)*

1. B. 36

6 fabrics
3 trims
2 pillow styles 6 x 3 x 2 = 36

2. C. 3 x 2 x 4 x 2

3 screen sizes
2 processors
4 memory sizes
2 colors 3 x 2 x 4 x 2

3. E. 108

3 appliance types
12 wall colors
3 cabinet types 3 x 12 x 3 = 108

4. A. 504

12 card colors
7 fonts
6 ink colors 12 x 7 x 6 = 504

5. D. 8 x 4 x 6 x 12

8 literature classes
4 math classes
6 science classes
12 history classes 8 x 4 x 6 x 12

6. B. 18

3 colors
3 trims
2 sleeve styles 3 x 3 x 2 = 18

7. D. 12 x 3 x 6

12 main dishes
3 side orders
6 beverages 12 x 3 x 6

8. A. 12

3 shed size choices
2 balcony number choices
2 garage sizes 3 x 2 x 2 = 12

ANSWERS – Negative Number Word Problems *(page 18)*

1. The temperature on Louisa's backyard thermometer was 19°F at 8:00 A.M., and when she checked again at 6:00 P.M., the temperature had gone down to –11°F. What was the average temperature decrease per hour in °F between 8:00 A.M. and 6:00 P.M.?

A. 8 B. 2 **C. 3** D. 30 E. 10

Calculate the amount of temperature decrease and the number of hours, then divide.

Step 1 Subtract high temperature minus low temperature.
19° – (–11°) = 30°. Temperature decrease is 30°.
Or, visualize the distance between 19 and –11 on a number line.

Step 2 Number of hours is 4 + 6 = 10.
4 hours from 8:00 A.M. until 12:00 NOON, plus 6 hours from 12:00 NOON until 6:00 P.M.

Step 3 Divide 30° ÷ 10 = **3°**. **ANSWER IS C. 3**

OR

Use trial and error. Start with 19°F at 8:00 A.M., and test each answer until you find the one that brings you to the desired ending temperature of –11°F at 6:00 P.M.

Try A. 8° decrease per hour		**Try B. 2° decrease per hour**		**Try C. 3° decrease per hour**	
8:00 A.M.	19°	8:00 A.M.	19°	8:00 A.M.	19°
9:00 A.M.	11°	9:00 A.M.	17°	9:00 A.M.	16°
10:00 A.M.	3°	10:00 A.M.	15°	10:00 A.M.	13°
11:00 A.M.	–5°	11:00 A.M.	13°	11:00 A.M.	10°
12:00 NOON	–13°	12:00 NOON	11°	12:00 NOON	7°
1:00 P.M.	–21°	1:00 P.M.	9°	1:00 P.M.	4°
2:00 P.M.	–29°	2:00 P.M.	7°	2:00 P.M.	1°
3:00 P.M.	–37°	3:00 P.M.	5°	3:00 P.M.	–2°
4:00 P.M.	–45°	4:00 P.M.	3°	4:00 P.M.	–5°
5:00 P.M.	–53°	5:00 P.M.	1°	5:00 P.M.	–8°
6:00 P.M.	–61°	6:00 P.M.	–1°	6:00 P.M.	–11°
It is not –11° at 6:00 P.M.		**It is not –11° at 6:00 P.M.**		**It is –11° at 6:00 P.M.**	
A. 8° is not correct.		**B. 2° is not correct.**		**C. 3° is correct.**	

Note – In problems like this that ask for the "average temperature decrease per hour," don't be confused by the use of the word average. You are not doing a traditional average calculation. The word average is used because the temperature will not decrease the exact same amount each hour. The rate you calculate will automatically be an average of all the individual hourly temperature decreases.

2. The temperature was –3°F when Alisa woke up at 6:00 A.M., and was expected to increase by a rate of 2°F per hour during the day. What is the predicted temperature in °F at 3:00 P.M. that afternoon?

A. 9 **B. 15** C. –15 D. 12 E. 5

Start with –3°F at 6:00 A.M. and add 2 degrees every hour until you get to 3:00 P.M.

6:00 A.M.	–3°
7:00 A.M.	–1°
8:00 A.M.	1°
9:00 A.M.	3°
10:00 A.M.	5°
11:00 A.M.	7°
12:00 NOON	9°
1:00 P.M.	11°
2:00 P.M.	13°
3:00 P.M.	**15°**

ANSWER IS B. 15

OR

Calculate number of hours, calculate temperature increase, and add that many degrees to the starting temperature.

Step 1 Number of hours is 6 + 3 = 9.
6 hours from 6:00 A.M. until 12:00 NOON, plus 3 hours from 12:00 NOON until 3:00 P.M.

Step 2 Temperature increase is 2° per hour x 9 hours = 18°.

Step 3 Add to starting temperature: –3° + 18° = **15°**. **ANSWER IS B. 15**

3. Mount Findley is 16,520 feet above sea level and Stanhope Valley is 195 feet below sea level. What is the difference in height between Mount Findley and Stanhope Valley? (Hint: think of sea level as 0 feet.)

A. 16,325 ft. B. 16,000 ft. C. 16,517 ft. D. 15,715 ft. **E. 16,715 ft.**

Subtract the low point from the high point. Think of a below sea level height as a negative number and an above sea level height as a positive number.

16,520 ft. – (–195 ft.) = **16,715 ft.** **ANSWER IS E. 16,715 ft.**

OR

Visualize traveling 195 feet from the low point to get up to sea level, plus another 16,520 feet to get from sea level to the high point, for a total distance traveled of 195 ft. + 16,520 ft. = **16,715 ft.**

4. At 10:00 P.M. the temperature in Buffalo was –6°F. By 10:00 A.M. the temperature had risen to 8°F. How many degrees Fahrenheit did the temperature rise overnight?

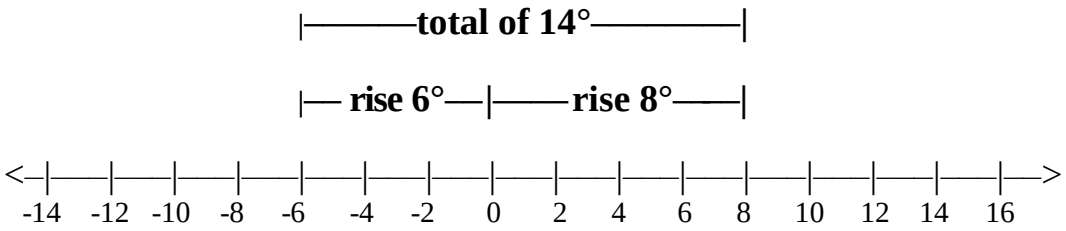
A. 14 B. 2 C. 12 D. 15 E. 5

Subtract the low temperature from the high temperature.

8° – (–6°) = **14°** **ANSWER IS A. 14**

OR

Visualize rising 6 degrees from the –6°F low temperature to get up to 0°F, plus another 8 degrees to get from 0°F to the high temperature of 8°F, for a total rise of 6° + 8° = **14°**. Drawing a number line may be helpful.



5. The lowest point of Sandy Shoal State Park is 75 feet below sea level, and the highest point is 900 feet above sea level. What is the difference in height between the highest and lowest points?

A. 825 ft. B. 957 ft. C. 852 ft. **D. 975 ft.** E. 850 ft.

Subtract the low point from the high point.

900 ft. – (–75 ft.) = **975 ft.** **ANSWER IS D. 975 ft.**

OR

Visualize traveling 75 feet from the low point to get up to sea level plus another 900 feet to get from sea level to the high point, for a total distance traveled of 75 ft. + 900 ft. = **975 ft.**

6. The temperature in Boone was –2°C at 5:00 A.M. and had risen to 8°C by 3:00 P.M. What was the per hour rate of temperature increase in °C from 5:00 A.M. to 3:00 P.M.?

A. 10 **B. 1** C. 1.5 D. 2 E. 6

Calculate the amount of temperature increase and the number of hours, then divide.

Step1 Subtract high temperature minus low temperature.
8° – (–2°) = 10°. Temperature increase is 10°.
Or, visualize the distance between –2 and 8 on a number line.

Step 2 Number of hours is 7 + 3 = 10.
7 hours from 5:00 A.M. until 12:00 NOON, plus 3 hours from 12:00 NOON until 3:00 P.M.

Step 3 Divide 10° ÷ 10 = **1°** **ANSWER IS B. 1**

OR

Use the trial and error method. Start with –2°C at 5:00 A.M., and test each answer until you find the one that brings you to the desired ending temperature of 8°C at 3:00 P.M.

Try A. 10° increase per hour

5:00 A.M.	–2°
6:00 A.M.	8°
7:00 A.M.	18°
8:00 A.M.	28°
9:00 A.M.	38°
10:00 A.M.	48°
11:00 A.M.	58°
12:00 NOON	68°
1:00 P.M.	78°
2:00 P.M.	88°
3:00 P.M.	98°

It is not 8° at 3:00 P.M.
A. 10° is not correct.

Try B. 1° increase per hour

5:00 A.M.	–2°
6:00 A.M.	–1°
7:00 A.M.	0°
8:00 A.M.	1°
9:00 A.M.	2°
10:00 A.M.	3°
11:00 A.M.	4°
12:00 NOON	5°
1:00 P.M.	6°
2:00 P.M.	7°
3:00 P.M.	8°

It is 8° at 3:00 P.M.
B. 1° is correct.

7. A science experiment predicted that a beaker of chemical solution would decrease in temperature by a rate of 2 degrees Celsius per hour. The temperature was 12 degrees Celsius at 10:00 A.M. If the prediction was correct, what was the temperature in degrees Celsius at 7:00 P.M.?

A. 12 **B. –6** C. 6 D. 9 E. 10

Start with 12°C at 10:00 A.M. and subtract 2 degrees every hour until you get to 7:00 P.M.

10:00 A.M.	12°
11:00 A.M.	10°
12:00 NOON	8°
1:00 P.M.	6°
2:00 P.M.	4°
3:00 P.M.	2°
4:00 P.M.	0°
5:00 P.M.	–2°
6:00 P.M.	–4°
7:00 P.M.	**–6°**

ANSWER IS B. –6

OR

Calculate number of hours, calculate temperature decrease, and subtract that many degrees from the starting temperature.

Step 1 Number of hours is 2 + 7 = 9.
2 hours from 10:00 A.M. until 12:00 NOON plus 7 hours from 12:00 NOON until 7:00 P.M.

Step 2 Temperature decrease is 2° per hour x 9 hours = 18°.

Step 3 Subtract from starting temperature: 12° – 18° = **–6°**. **ANSWER IS B. –6**

8. Mr. Ahmed's science class sampled the temperatures of many chemical solutions under different experimental conditions. The highest temperature found was 68°F and the lowest temperature found was –18°F. What was the range of temperatures sampled in °F?

A. 86 B. 40 C. 50 D. 68 E. 85

Range means the distance between the high and low points.
Subtract the low temperature from the high temperature.

68° – (–18°) = **86°** **ANSWER IS A. 86**

OR

Visualize rising 18 degrees from the –18°F low temperature to get up to 0°F, plus another 68 degrees to get from 0°F to the high temperature of 68°F, for a total range of 18° + 68° = **86°**.

9. The temperature in Natick is 15 degrees Fahrenheit at 10:00 P.M., and is predicted to decrease by an average of 2.5 degrees Fahrenheit per hour through the night. What temperature should you expect to find at 6:00 A.M. in degrees Fahrenheit?

A. 5 B. –20 C. 20 D. 6 **E. –5**

Start with 15°F at 10:00 P.M. and subtract 2.5 degrees each hour until you get to 6:00 A.M.

10:00 P.M.	15°
11:00 P.M.	12.5°
12:00 MIDNIGHT	10°
1:00 A.M.	7.5°
2:00 A.M.	5°
3:00 A.M.	2.5°
4:00 A.M.	0°
5:00 A.M.	–2.5°
6:00 A.M.	**–5°**

ANSWER IS E. –5

OR – Calculate number of hours, calculate temperature decrease, and subtract that many degrees from the starting temperature.

Step 1 Number of hours is 2 + 6 = 8.
2 hours from 10:00 P.M. until 12:00 MIDNIGHT, plus 6 hours from 12:00 MIDNIGHT until 6:00 A.M.
Step 2 Temperature decrease is 2.5° per hour x 8 hours = 20°.
Step 3 Subtract from starting temperature: 15° – 20° = **–5°**. **ANSWER IS E. –5**

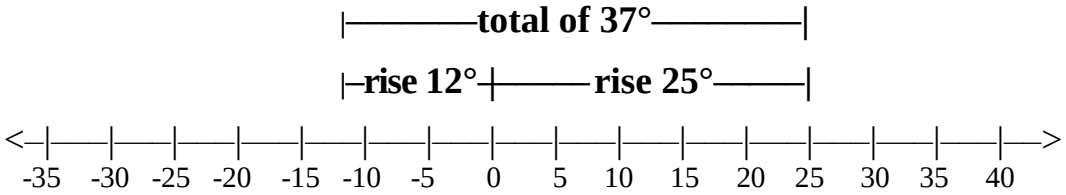
10. Jackie's class recorded temperatures at 9:00 A.M. every school day for the entire school year. The highest temperature was 25 degrees Celsius and the lowest temperature was –12 degrees Celsius. What was the range between the highest and lowest temperature in degrees Celsius?

A. 13 B. 31 **C. 37** D. 73 E. 38

Subtract the low temperature from the high temperature.

25° – (–12°) = **37°** **ANSWER IS C. 37**

OR – Visualize rising 12 degrees from the –12°C low temperature to get up to 0°C, then rising another 25 degrees to get from 0°C to the high temperature of 25°C, for a total range of 12° + 25° = **37°**. Drawing a number line may be helpful.



11. The temperature in a city decreased from 16°F at 6:00 P.M. to –6°F at 5:00 A.M. the next morning. What was the average rate of temperature decrease per hour in °F between 6:00 P.M. and 5:00 A.M.?

A. 1 B. 2.5 **C. 2** D. 10 E. 1.5

Calculate the amount of temperature decrease and the number of hours, then divide.

Step 1 Subtract high temperature minus low temperature.
16° – (–6°) = 22°. Temperature decrease is 22°.
Or, visualize the distance between –6 and 16 on a number line.

Step 2 Number of hours is 6 + 5 = 11.
6 hours from 6:00 P.M. until 12:00 MIDNIGHT, plus 5 hours from 12:00 MIDNIGHT until 5:00 A.M.

Step 3 Divide 22° ÷ 11 = **2°**. **ANSWER IS C. 2**

OR

Use trial and error. Start with 16°F at 6:00 P.M., and test each answer until you find the one that brings you to the desired ending temperature of –6°F at 5:00 A.M.

Try A. 1° decrease per hour		**Try B. 2.5° decrease per hour**		**Try C. 2° decrease per hour**	
6:00 P.M.	16°	6:00 P.M.	16°	6:00 P.M.	16°
7:00 P.M.	15°	7:00 P.M.	13.5°	7:00 P.M.	14°
8:00 P.M.	14°	8:00 P.M.	11°	8:00 P.M.	12°
9:00 P.M.	13°	9:00 P.M.	8.5°	9:00 P.M.	10°
10:00 P.M.	12°	10:00 P.M.	6°	10:00 P.M.	8°
11:00 P.M.	11°	11:00 P.M.	3.5°	11:00 P.M.	6°
12:00 MIDNIGHT	10°	12:00 MIDNIGHT	1°	12:00 MIDNIGHT	4°
1:00 A.M..	9°	1:00 A.M..	–1.5°	1:00 A.M..	2°
2:00 A.M.	8°	2:00 A.M.	–4°	2:00 A.M.	0°
3:00 A.M.	7°	3:00 A.M.	–6.5°	3:00 A.M.	–2°
4:00 A.M.	6°	4:00 A.M.	–9°	4:00 A.M.	–4°
5:00 A.M.	5°	5:00 A.M.	–11.5°	5:00 A.M.	–6°
It is not –6° at 5:00 A.M.		**It is not –6° at 5:00 A.M.**		**It is –6° at 5:00 A.M.**	
A. 1° is not correct.		**B. 2.5° is not correct.**		**C. 2° is correct.**	

12. The temperature in Dover is –4 degrees Fahrenheit at 4:00 A.M. and is expected to rise at a rate of 3 degrees Fahrenheit per hour through the day. What do you predict the temperature will be at 2:00 P.M. in degrees Fahrenheit?

A. 34 B. 30 **C. 26** D. –30 E. –26

Start with –4°F at 4:00 A.M. and add 3 degrees every hour until you get to 2:00 P.M.

4:00 A.M.	–4°
5:00 A.M.	–1°
6:00 A.M.	2°
7:00 A.M.	5°
8:00 A.M.	8°
9:00 A.M.	11°
10:00 A.M.	14°
11:00 A.M.	17°
12:00 NOON	20°
1:00 P.M.	23°
2:00 P.M.	**26°**

ANSWER IS C. 26

OR

Calculate number of hours, calculate temperature increase, and add that many degrees to the starting temperature.

Step 1 Number of hours is 8 + 2 = 10.
8 hours from 4:00 A.M. until 12:00 NOON, plus 2 hours from 12:00 NOON until 2:00 P.M.

Step 2 Temperature increase is 3° per hour x 10 hours = 30°.

Step 3 Add to starting temperature: –4° + 30° = **26°**. **ANSWER IS C. 26**

13. The temperature of a chemical solution was –4°C at 9:00 P.M. when Leo left his laboratory. When he returned at 6:00 A.M. the temperature had risen to 14°C. What was the average hourly temperature increase in °C between 9:00 P.M. and 6:00 A.M.?

A. 1.5 **B. 2** C. 1 D. 10 E. 18

Calculate the amount of temperature increase and the number of hours, then divide.

Step 1 Subtract high temperature minus low temperature.
14° – (–4°) = 18°. Temperature increase is 18°.
Or, visualize the distance between –4 and 14 on a number line.

Step 2 Number of hours is 3 + 6 = 9.
3 hours from 9:00 P.M until 12:00 MIDNIGHT, plus 6 hours from 12:00 MIDNIGHT until 6:00 A.M.

Step 3 Divide 18° ÷ 9 = **2°**. **ANSWER IS B. 2**

OR

Use the trial and error method. Start with –4°C at 9:00 P.M., and test each answer until you find the one that brings you to the desired ending temperature of 14°C at 6:00 A.M.

Try A. 1.5° increase per hour

9:00 P.M.	–4°
10:00 P.M.	–2.5°
11:00 P.M.	–1°
12:00 MIDNIGHT	0.5°
1:00 A.M.	2°
2:00 A.M.	3.5°
3:00 A.M.	5°
4:00 A.M.	6.5°
5:00 A.M.	8°
6:00 A.M.	9.5°

It is not 14° at 6:00 A.M.
A. 1.5° is not correct.

Try B. 2° increase per hour

9:00 P.M.	–4°
10:00 P.M.	–2°
11:00 P.M.	0°
12:00 MIDNIGHT	2°
1:00 A.M.	4°
2:00 A.M.	6°
3:00 A.M.	8°
4:00 A.M.	10°
5:00 A.M.	12°
6:00 A.M.	14°

It is 14° at 6:00 A.M.
B. 2° is correct.

ANSWERS – Word Problems Part One Test *(page 20)*

1. Mike's cell phone plan charges $32.50 per month. It includes unlimited texts and the first 60 phone calls are also included in the monthly charge. Any additional phone calls are billed at 7¢ per call. Which of the following expressions represents his cell phone bill in a month where Mike makes 75 phone calls?

A. $32.50 + ($0.70)(15) B. $32.50 + ($0.07 x 75) C. $32.50 + 60
D. $32.50 + ($0.07)(15) E. $32.50 + ($0.07 x 60)

Add together the cost for the monthly charge and the cost for the additional phone calls.
Monthly charge is $32.50.
There are 75 total phone calls and 60 of the calls are free. 75 – 60 = 15, so 15 phone calls will be charged.
Each of these 15 calls is charged at 7¢ per call, so that will be ($0.07)(15).
Add together, so **ANSWER IS D. $32.50 + ($0.07)(15).**

2. The telephone company charges a monthly fee of $45 which includes unlimited local calls and 25 long distance calls. Additional long distance calls are billed at 59¢ per call. If Bob makes 48 local calls and 45 long distance calls, what is his monthly bill?

A. $59.75 B. $71.55 C. $73.32 D. $45.59 **E. $56.80**

Add together the monthly fee + cost of local calls + cost of long distance calls.
Monthly fee = **$45**.
Cost of local calls = **$0**, because the monthly fee includes unlimited local calls.
Cost of long distance calls is 20 calls x $0.59 = **$11.80**.
25 long distance calls are included in the monthly fee, so 45 – 25 = 20 long distance calls that are charged the $0.59 fee.
$45 + $0 + $11.8 = $56.80, so **ANSWER is E. $56.80.**

3. The Paper Mart offers a rebate of $1.50 per case for half of the cases of copy paper that a company buys during the year. How much of a rebate can a company get if it purchased 440 cases of paper last year?

A. $330 B. $660 C. $303 D. $220 E. $333

Calculate the number of cases that qualify for a rebate, and multiply by $1.50 each.
Cases that qualify are half of the total cases, so 440 x ½ = 220 cases.
220 x $1.50 = $330 so **ANSWER is A. $330.**

4. The temperature was –5°F when Jeannie woke up at 5:00 A.M., and the weather report predicted an increase of 2°F per hour during the day. What temperature in °F should Jeannie expect to find at 2:00 P.M. that afternoon?

A. –13 **B. 13** C. –15 D. 15 E. 10

Start with –5°F at 5:00 A.M. and add 2 degrees every hour until you get to 2:00 P.M.

5:00 A.M.	–5°
6:00 A.M.	–3°
7:00 A.M.	–1°
8:00 A.M.	1°
9:00 A.M.	3°
10:00 A.M.	5°
11:00 A.M.	7°
12:00 NOON	9°
1:00 P.M.	11°
2:00 P.M.	**13°**

ANSWER is B. 13

OR

Calculate number of hours, calculate temperature increase, and add that many degrees to the starting temperature.

Step 1 Number of hours is 7 + 2 = 9.
7 hours from 5:00 A.M. until 12:00 NOON, plus 2 hours from 12:00 NOON until 2:00 P.M.

Step 2 Temperature increase is 2° x 9 hours = 18°.

Step 3 Add to starting temperature: –5° + 18° = **13°**. **ANSWER is B. 13**

5. The machine at Speedy Car Wash can wash 12 cars per hour. Speedy Car Wash is open 9 hours per day and 6 days per week. Which expression shows the maximum number of cars that could be washed in 1 week?

A. 12 x 9 + 6 B. 12 + 9 + 6 C. (12 x 9) ÷ 6 D. 12 + 9 x 6 **E. 12 x 9 x 6**

You are given 12 cars per hour.
First calculate cars per day. Multiply by 9 hours per day. 12 x 9
Then calculate cars per week. Multiply by 6 days per week. 12 x 9 x 6
ANSWER is E. 12 x 9 x 6.

6. To rent a car it costs $18 per day and 12 cents for every mile driven over 250 miles. If Mateo rents a car for 6 days and drives 625 miles, which of the following expressions show how much it will cost to rent the car?

A. $18 x 6 + $12 x (625 – 250) **B. $18 x 6 + $0.12 x (625 – 250)**
C. $18 x 6 + (625 – 250) D. $18 + 6 x 250 E. $18 x 6 + 625 x $0.12

Calculate the rental charge and the mileage charge, then add together.
Rental charge is $18 per day x 6 days, or $18 x 6.
Miles charged are 625 – 250. These miles must be multiplied by the $0.12 per mile cost, so mileage charge is $0.12 x (625 – 250).
Add the two charges together, so **ANSWER is B. $18 x 6 + $0.12 x (625 – 250).**

7. Aisha can buy a home entertainment system for $2,650 cash, or she can make payments of $130 per month for 2 years. Which expression shows how much she will save by paying cash?

A. ($130 x 24) – $2,650 B. $2,650 – ($130 x 24) C. $2,650 – ($130 x 12)
D. ($130 x 2) – $2,650 E. ($2,650 – $130) x 24

Calculate the total cost of the payment plan, and then subtract the cash price.
Payment plan cost is $130 x 24 months.
Cash price is $2,650.
ANSWER is A. ($130 x 24) – $2,650.
Note that you subtract the lower price from the higher price, which is answer A, not the other way around, which is answer B.

8. Sarah made 64 cakes to sell in her bake shop at a cost of $3.25 in ingredients for each cake. How many cakes will she need to sell at $16 each in order to cover the cost of ingredients for all 64 cakes?

A. 20 B. 208 C. 16 **D. 13** E. 31

Calculate the cost of ingredients to make the 64 cakes, and divide by $16 to see how many cakes must be sold to cover the cost of the ingredients.
Cost of ingredients is 64 x $3.25 = $208.
$208 ÷ $16 = 13, so **ANSWER is D. 13.**

9. Leon spent a total of $450 on new dinner plates for his restaurant. If each plate cost $3, how many plates did he buy?

A. 1,350 B. 510 **C. 150** D. 105 E. 453

Divide the total spent by the cost per plate to get the number of plates.
$450 ÷ $3 = 150, so **ANSWER is C. 150.**

OR, set up a proportion. $\frac{\text{Cost}}{\text{\# of plates}} \quad \frac{\$3}{1} = \frac{\$450}{?}$ $450 x 1 ÷ $3 = **150**

10. Liza is ordering advertising posters for her company. She can choose 2, 3, or 4 color printing, matte or glossy finish, and 2, 4, or 6 square feet for the size. If any combination of color number, finish, and size can be ordered, how many different styles of posters could Liza choose for her company?

A. 27 **B. 18** C. 8 D. 36 E. 24

Multiply the number of choices in each category. 3 x 2 x 3 = **18**
Number of colors: 3 choices.
Finish: 2 choices.
Size: 3 choices.
3 x 2 x 3 = 18, so **ANSWER is B. 18**.

11. At the Signal Mountain observatory tower, the temperature was 14°F at 9:00 A.M., and by 5:00 P.M. it had fallen to –10°F. What was the average temperature decrease per hour in °F between 9:00 A.M. and 5:00 P.M.?

A. 2 B. 1 **C. 3** D. 4 E. 24

Calculate the amount of temperature decrease and the number of hours, then divide.

Step 1 Subtract high temperature minus low temperature.
14° – (–10°) = 24°. Temperature decrease is 24°.
Or, visualize the distance between –10 and 14 on a number line.

Step 2 Number of hours is 3 + 5 = 8.
3 hours from 9:00 A.M. until 12:00 NOON, plus 5 hours from 12:00 NOON until 5:00 P.M.

Step 3 Divide 24° ÷ 8 = 3°. **ANSWER is C. 3**

OR, Use trial and error. Start with 14°F at 9:00 A.M., and test each answer until you find the one that brings you to the desired ending temperature of –10°F at 5:00 P.M.

Try A. 2° decrease per hour		**Try B. 1° decrease per hour**		**Try C. 3° decrease per hour**	
9:00 A.M.	14°	9:00 A.M.	14°	9:00 A.M.	14°
10:00 A.M.	12°	10:00 A.M.	13°	10:00 A.M.	11°
11:00 A.M.	10°	11:00 A.M.	12°	11:00 A.M.	8°
12:00 NOON	8°	12:00 NOON	11°	12:00 NOON	5°
1:00 P.M.	6°	1:00 P.M.	10°	1:00 P.M.	2°
2:00 P.M.	4°	2:00 P.M.	9°	2:00 P.M.	–1°
3:00 P.M.	2°	3:00 P.M.	8°	3:00 P.M.	–4°
4:00 P.M.	0°	4:00 P.M.	7°	4:00 P.M.	–7°
5:00 P.M.	–2°	5:00 P.M.	6°	5:00 P.M.	–10°
It is not –10° at 5:00 P.M.		**It is not –10° at 5:00 P.M.**		**It is –10° at 5:00 P.M.**	
A. 2° is not correct.		**B. 1° is not correct.**		**C. 3° is correct.**	

12. Robert buys an average of 11 pounds of chicken every week. How many pounds of chicken will he buy over the next 9 ½ weeks at this same rate?

A. 20 ½ B. 140 ½ C. 144 ½ D. 140 **E. 104 ½**

Multiply 11 pounds per week times 9 ½ weeks.
11 x 9 ½ = 104 ½ so **ANSWER is E. 104 ½.**

13. Andrew can clean and peel 4 shrimp per minute at his restaurant job. How many shrimp can he clean and peel in 5 days if he spends 2 hours per day at this task?

A. 240 B. 480 **C. 2,400** D. 40 E. 1,200

You are given 4 shrimp cleaned and peeled per minute.
First calculate the number of shrimp he can clean and peel in 1 hour.
4 shrimp per minute x 60 minutes in 1 hour = 240 shrimp in 1 hour.

Next calculate how many shrimp he can clean and peel in 1 day.
240 shrimp per hour x 2 hours each day = 480 shrimp in 1 day.

Then multiply by 5 to get shrimp cleaned and peeled in 5 days.
480 shrimp per day x 5 days = 2,400 shrimp in 5 days.
ANSWER is C. 2,400.

14. At Byron Sub Shop customers can choose from 4 kinds of bread, 12 kinds of meat, and 5 kinds of cheese. Choose an expression that shows the number of different possible combinations of one bread, one meat, and one cheese.

A. 4 x 12 x 5 B. 4(12+ 5) C. (4 +12)(5) D. 4 + 12 + 5 E. 4 x 12 + 5

Multiply the number of choices in each category.
4 breads x 12 meats x 5 cheeses, so **ANSWER is A. 4 x 12 x 5.**

15. Angela is buying 20 desk lamps for her office. Deluxe style lamps are $39.99 each, and Economy style lamps are $28.99 each. Which expression shows how much she will save by choosing the less expensive lamp style?

A. 20($39.99 + $28.99) B. $28.99 x 20 + $39.99
C. ($39.99 x 20) – ($28.99 x 20) D. ($39.99 x 20) + ($28.99 x 20)
E. ($39.99 + 20) – ($28.99 + 20)

Calculate the cost for both lamp styles, then subtract the lower cost from the higher cost.
Cost of 20 Deluxe style lamps is $39.99 x 20.
Cost of 20 Economy style lamps is $28.99 x 20.
ANSWER is C. ($39.99 x 20) – ($28.99 x 20).

16. Bridal Bliss pays their salespeople a $19 commission per dress for the first 55 wedding dresses sold each month. The commission per dress for any additional dresses sold beyond 55 is 2 times the rate of the first 55 dresses. If a salesperson sells 75 dresses in a month, how much commission will be earned?

A. $1,805 B. $1,425 C. $1,045 D. $3,895 E. $1,850

Calculate separately the commission for the first 55 dresses, and the commission for the rest of the dresses, and then add the two commissions together.

1. Commission for the first 55 dresses is $19 per dress, so $19 x 55 = $1,045.
2. Commission for the rest of the dresses is at 2 times the rate, or 2 x $19 = $38 per dress. There are 75 – 55 = 20 dresses at this rate, and 20 x $38 = $760.

Add together both commissions. $1,045 + $760 = $1,805 so **ANSWER is A. $1,805.**

17. Lisa bought a bottle of shampoo for $2.99, a box of tissues for $1.29, and a hairbrush for $7.99. Which expression shows how much change she will receive if she pays with a 20 dollar bill? (Assume there is no sales tax.)

A. ($2.99 + $1.29 + $7.99) – $20.00 B. $20.00 – $2.99 + $1.29 + $7.99
C. $20.00 – ($2.99 + $1.29 + $7.99) D. $20.00 + $2.99 + $1.29 + $7.99
E. $20.00 – ($2.99 – $1.29 – $7.99)

Subtract all of the expenses from $20. To do this, add up the expenses, put them in parentheses, and subtract from $20.
The expenses are ($2.99 + $1.29 + $7.99), so **ANSWER is**
C. $20.00 – ($2.99 + $1.29 + $7.99).

Note: the minus sign in front of the parentheses means to subtract everything inside the parentheses, so answer C is correct.
Answer E is not correct, because it says to subtract $2.99, –$1.29, and –$7.99 instead of subtracting $2.99, $1.29, and $7.99.

18. Nelson opened a bank account with a deposit of $950. During the week, he deposited his paycheck of $1,495.63, and he wrote two checks: $42.74 for his phone bill, and $115.69 for his cable bill. He also got $30 from the ATM machine on Monday and another $25 on Friday. What is his bank balance at the end of the week?

A. $1,282.20 B. $2,322.20 C. $2,287.20 D. $2,257.20 **E. $2,232.20**

Start with the opening balance, subtract checks and cash taken out, and add checks and cash deposited.
$950 + $1,495.63 – $42.74 – $115.69 – $30 – $25 = $2,232.20
so **ANSWER is E. $2,232.20.**

19. The Belmont High School band needs to raise money for the annual band trip. So far, they have donations of $2,000, and the school will contribute $4,000 from its budget. The rest will be raised by selling tickets to a band concert. The total amount needed for the trip is $7,500. If each concert ticket costs $10, how many tickets must be sold to reach the $7,500 total?

A. 1,500 B. 105 C. 750 **D. 150** E. 200

First calculate how much money still has to be raised, then divide by $10 to see how many tickets need to be sold to raise that amount of money.
They need $7,500 total, and they have $6,000 so far, so they still need
$7,500 – $6,000 = $1,500.
$1,500 ÷ $10 = 150 so **ANSWER is D. 150.**

20. Joe earns $900 base pay plus a $100 commission per car for the first 10 cars he sells each month. Any additional cars he sells earn him a commission rate that is 1.5 times the rate for the first 10 cars. How much will Joe earn in a month where he sells 14 cars?

A. $2,300 **B. $2,500** C. $1,900 D. $2,400 E. $2,600

Calculate separately then add together three pieces: base pay + commission on the first 10 cars sold + commission on the rest of the cars sold.

1. Base pay = **$900**.
2. Commission on the first 10 cars is $100 each, and $100 x 10 = **$1,000**.
3. Commission rate for the rest of the cars is 1.5 times the first rate, or
   1.5 x $100 = $150 each.
   The cars that get this rate are the total sold minus the first 10 sold, or 14 – 10 = 4.
   Commission on these cars is $150 x 4 = **$600**.

Add together the three pieces. $900 + $1,000 + $600 = $2,500, so
ANSWER is B. $2,500.

21. The 45 employees of a restaurant were all given 3 new uniform shirts. If each shirt cost $8.75, which expression shows how much it cost to purchase all of the shirts?

A. 45 x 3 ÷ $8.75 **B. 45 x 3 x $8.75** C. 45 ÷ 3 x $8.75
D. 45 ÷ 3 ÷ $8.75 E. 45 x $8.75

Calculate the total number of shirts, then multiply by the cost of each shirt.
There are 45 employees, and each gets 3 shirts, so there are 45 x 3 total shirts. Then multiply by the $8.75 cost of each shirt, so **ANSWER is B. 45 x 3 x $8.75.**

22. Outside temperature was recorded at Statesville Municipal Airport at 6:00 A.M. every day for the entire year. The highest temperature was 32 degrees Celsius and the lowest temperature was –18 degrees Celsius. What was the range between the highest temperature and the lowest temperature in degrees Celsius?

A. 50 B. 14 C. 55 D. 15 E. 51

Subtract the low temperature from the high temperature.
32° – (–18°) = 50° so **ANSWER is A. 50.**

OR

Visualize rising 18 degrees from the –18°C low temperature to get up to 0°C, plus another 32 degrees to get from 0°C to the high temperature of 32°C, for a total range of 18° + 32° = 50°. Drawing a number line may be helpful.