# Level A - Form 1 - Applied Mathematics: Problem Solving and Reasoning

## Sample Question

Ed sold 75% of the toy soldiers he had in his collection. What information is needed to determine how many soldiers he sold?

- A the price he charged for each toy soldier
- B the size and weight of each toy soldier
- C the total number of toy soldiers he had in his collection
- D the length of time he had been trying to sell his collection

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The table shows Mitch's checking account activity for the beginning of July. Study the table. Then do Numbers 1 through 4.

| Date | Check Number | Description | Withdrawal | Deposit | Balance |
|------|------|------|------|------|------|
| 6/30 | | Beginning Balance | | | $695.00 |
| 7/1 | 204 | Cable Bill | $36.96 | | |
| 7/2 | | Computer Refund | | $50.00 | |
| 7/3 | 205 | Rent | $625.00 | | |
| 7/5 | | Paycheck | | $985.75 | |
| 7/8 | 206 | Electric Bill | $56.18 | | |

1. In July Mitch balanced his checkbook after he paid his rent. What is the balance of his account as of July 3?

    A $70.00

    B $16.96

    C $83.04

    D $33.04

2. On July 14, Mitch's cell phone bill is due. His cell phone bill is about 20% more than his cable bill. Which expression shows the amount of his cell phone bill?

    F $36.96 × 1.20

    G $36.96 × 0.80

    H $36.96 × 0.20

    J $36.96 × 20

3. On July 10, Mitch used his debit card to make a purchase and get cash back. He forgot to record the transaction in his checkbook. He decides to call the bank for his information so he can balance his checkbook. What information does he need to know to calculate his balance?

    A the transaction number

    B the store where the purchase was made

    C the items he purchased

    D the amount of the transaction

4. Mitch entered the data from his checkbook into a computer program to help him create a budget. The computer program determined that Mitch earns about $4,000.00 a month. This is about twice what he actually earns. What assumption did the computer program make in determining Mitch's income?

    F Mitch will receive a computer refund more than once a month.

    G Mitch receives a weekly, rather than bi-monthly, paycheck.

    H The balance and withdrawal amounts are income.

    J Mitch's income will increase.

**The table shows the nutrition information from a box of crackers. Study the table. Then do Numbers 5 through 6.**

```
Amount Per Serving
Calories 130          Calories from Fat  35
                            % Daily Value
Total Fat  4g                   6%
   Saturated Fat  1g            4%
   Polyunsaturated Fat  0g
   Monounsaturated Fat  1.5g
Cholesterol  0mg                0%
Sodium  260mg                   11%
Total Carbohydrate  21g         7%
   Dietary Fiber  1g
   Sugars  3g
Protein  2g
```

5.  One serving of crackers contains 21 grams of carbohydrates. One gram of carbohydrate contains 4 calories. About what percent of the total calories in a serving are carbohydrates?

   A  about 65%

   B  about 21%

   C  about 28%

   D  about 77%

6.  Terri is reading the nutrition label to find out how much fat is in 10 crackers. What information does she need that isn't in the table?

   F  the amount of fat she ate already

   G  the number of crackers in the box

   H  the number of crackers per serving

   J  the amount of calcium in 10 crackers

7.  Arlene is knitting a blanket for her granddaughter. She knows that one roll of yarn will produce about 2 square feet of blanket. What other information does she need to know to buy enough yarn for the blanket?

   A  the size of the baby

   B  the dimensions of the blanket

   C  the color of the blanket

   D  the type of stitch used

8.  The chart below shows the results of taste tests held at three different malls to see which soda people prefer.

| | Preferred Soda A | Preferred Soda B | No Preference |
|---|---|---|---|
| Mall 1 | 12 | 14 | 5 |
| Mall 2 | 18 | 8 | 3 |
| Mall 3 | 15 | 18 | 10 |

Based on the results of the tests, the company decided to put Soda B on the market because two-thirds of those tested preferred Soda B. What error did the company make in reaching this conclusion?

   F  They did not question the same amount of people in each mall.

   G  They did not include those people listed under No Preference.

   H  They looked at what fraction of the malls preferred Soda B overall.

   J  They compared Soda B to No Preference.

**The sign shows prices at the deli. Study the sign. Then do Numbers 9 through 12.**



**Deli Savings!**

| | |
|---|---|
| Turkey Breast | $5.99/lb |
| Smoked Ham | $4.85/lb |
| American Cheese | $3.68/lb |
| Swiss Cheese | $4.39/lb |

9. Kim spent a total of $12.72 at the deli. She bought a pound of turkey breast and some ham. Which equation shows how many pounds of ham (*h*) Kim bought?

    A   $h = \$12.72 - \$5.99$

    B   $h = \dfrac{\$12.72 - \$5.99}{\$4.85}$

    C   $h = \$12.72 - \dfrac{\$5.99}{\$4.85}$

    D   $h = (\$12.72 - \$4.85) \div \$5.99$

10. How much would 2 pounds of turkey and a half-pound of American cheese cost?

    F  $13.82

    G  $11.98

    H  $10.36

    J  $15.66

11. Karen asked for one and a half pounds of Swiss cheese. When the package was handed to her, the price said $5.52. What error did the deli employee make?

    A  The employee gave her 2 pounds of Swiss cheese.

    B  The employee gave her 1 pound of Swiss cheese.

    C  The employee used the price for smoked ham.

    D  The employee used the price for American cheese.

12. Jodi puts 2 slices of meat on her children's sandwiches for lunch. She wants to buy enough meat for her 2 children to have a sandwich every day this week at school. What information does she need to know to buy the correct amount of meat?

    F  how much cheese goes on a sandwich

    G  how many slices are in a pound

    H  the fat content in turkey versus ham

    J  what meat her children prefer

The catalog order form is used to order items through the mail. Study the form. Then do Numbers 13 through 14.

| Page No. | Item No. | Color | Size | Quantity | Description | Price Each | Total |
|---|---|---|---|---|---|---|---|
| 12 | 01462 | Black | M | 1 | V-Neck Sweater | $34.99 | $34.99 |
| 37 | 05834 | Yellow | 7 | 1 | Flip Flops | $16.00 | $16.00 |
| 42 | 06135 | Navy | M | 2 | Jacket | $85.99 | $171.98 |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**Shipping and Handling Fees:**

| | |
|---|---|
| up to $25 | $4.95 |
| 25.01–50 | $6.95 |
| 50.01–75 | $8.95 |
| 75.01–100 | $9.95 |
| 100.01–150 | $11.95 |
| 150.01–200 | $12.95 |
| 200.01–250 | $14.95 |
| 250 up | $15.95 |

NY residents add 5%
FL residents add 6.5%
MA residents add 6%

| | |
|---|---|
| Subtotal | |
| Shipping & handling | |
| Express Delivery (add $6.00) | |
| Sales Tax (see chart) | |
| Subtract Coupons | |
| Grand Total | |

13. Susan, a California resident, is filling out this catalog order form. She wrote a check for $235.92 for her order. What error did she make in her calculation?

    A  She forgot to add sales tax.

    B  She only added one jacket.

    C  She used the wrong shipping and handling amount.

    D  She added express delivery.

14. Which equation could be used to calculate the grand total, *T*, for a Massachusetts resident who ordered $52.00 worth of merchandise and wants express delivery?

    F  $T = 1.06(52.00) + 8.95$

    G  $T = 1.06(52.00) + 14.95$

    H  $T = 0.06(52.00) + 8.95$

    J  $T = 0.06(52.00) + 14.95$

15. At a powerlifting competition, the winner of the men's category lifted 52 kilograms less than twice the weight of the winner of the women's category. The winner of the men's category lifted 358 kilograms. Which equation shows the weight (*w*) lifted by the winner of the women's category?

    A  $w = \dfrac{358 + 52}{2}$

    B  $w = \dfrac{358 - 52}{2}$

    C  $w = 2(358 + 52)$

    D  $w = 2(358 - 52)$

16. The width of the bedroom is 3 feet more than half the length, *l*. Which expression represents the area of the room?

    F  $\dfrac{1}{2}l^2 - 3l$

    G  $\dfrac{1}{2}l + 3$

    H  $\dfrac{1}{2}l^2 + 3l$

    J  $\dfrac{1}{2}l + 3l$

**A landscaper has designed a brick walkway that is 12 feet long and 3 feet wide. He plans to build it using gray bricks that measure 8 inches wide and 6 inches long. These bricks sell for $0.96 each. Use this information to do Numbers 17 through 19.**

17. How many bricks will the landscaper need for the walkway?

    A  74 bricks

    B  144 bricks

    C  30 bricks

    D  108 bricks

18. Margie purchased 75 bricks. She had a coupon for 10% off her total purchase. She used the equation below to estimate the cost after the discount. What error did she make?

    ($1.00 × 75) − $10 = $65

    F  She incorrectly rounded the price.

    G  She subtracted the discount instead of added.

    H  She did not use the correct discount amount.

    J  She did not include the discount.

19. Each brick weighs 11.5 pounds. The rental trailer is rated to carry 1,500 pounds. What is the maximum number of whole bricks the trailer can hold?

    A  130

    B  131

    C  132

    D  135

20. A gardener is planting flowerbeds in two corners of a yard. The nursery recommends that each plant have a square foot around it to grow. Which information does the gardener need in order to buy the right number of plants?

    F  the area of the yard

    G  the perimeter of the yard

    H  the perimeter of the flowerbeds

    J  the area of the flowerbeds