# Level D - 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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1. What information is needed to determine the number of fish dinners ordered?

Reception Dinners Ordered


A the number of fish dinners ordered last year
$B$ the nutritional content of each dinner
$C$ the total number dinners ordered
D the percent of dinners ordered other than fish
2. The Pu family is visiting a theme park. What information is needed to find the total cost of admission for the family?

F the amount of money they will spend inside the park
$G$ the price of admission for each person
$H$ the number of people in the family
$J$ the number of people in the family and the price of admission for each person

The table shows the cost of producing one saw at the Delmar Hardware Company. Study the table. Then do Numbers 3 through 5.


## Production Cost of One Saw

| Wood | $\$ 0.75$ |
| :--- | :--- |
| Metal | $\$ 3.25$ |
| Labor | $\$ 6.00$ |

3. What is the total cost for producing ten saws?

A $\$ 64.00$
B $\$ 92.50$
C $\$ 100.00$
D $\$ 20.00$
4. The Delmar Hardware Company sells saws for $\$ 14.95$ each. How much more is this than the cost of materials and labor?

F \$4.95
G \$5.05
H \$8.20
J \$5.70
5. Ralph's Construction Company purchased three saws for $\$ 14.95$ each. The sales tax for the three saws was $\$ 2.25$. If Ralph paid with three $\$ 20.00$ bills, how much change should he get?

A $\$ 8.40$
B $\$ 12.90$
C $\$ 13.90$
D $\$ 42.80$

The advertisement from Valley Motor shows sales prices for sedans. Study the ad. Then do Numbers 6 through 7.

6. Mr. Gomez is buying a 4-door sedan today and will pay in full. What information is still needed to determine the total he will pay?
$F$ the finance charges
G the price of the sedan
H the sales tax rate
$J$ the cost of the sedan before the sale
7. Which of these is not needed to find out how much it will cost to finance the sedan?

A the number of monthly payments
$B$ the down payment
C the selling price of the sedan
D the number of accessories included with the sedan

The table shows the daily rental rates for an economy car at three locations. Study the table. Then do Numbers 8 through 10.

| Far Rental Prices |  |  |
| :---: | :---: | :---: |
| Location | $\mathbf{6}$ Months Ago | This Month |
| EZ Rental | $\$ 18.75$ | $\$ 20.50$ |
| Car for a Day | $\$ 21.50$ | $\$ 22.75$ |
| Rent-a-Car | $\$ 19.95$ | $\$ 22.00$ |

8. In 6 months, Rent-a-Car will increase their daily rate for an economy car $5 \%$. The manager calculated that the new daily rate will be $\$ 27.00$. What error did he make in his calculation?

F He assumed that 5\% is the same as $\$ 5.00$.

G He found $5 \%$ of $\$ 27.00$.
H He added $5 \%$ to the daily rate from 6 months ago.
J He found $0.5 \%$ of $\$ 22.00$.
9. Tanya determined that the increase in daily rates at EZ Rental over the last 6 months was $\$ 2.75$. What error did she make in her calculation?

A She read the wrong line in the table.
B She made a subtraction error.
C She added the two daily rates.
D She estimated the difference.
10. Which location had the greatest increase in daily rates over the last 6 months?

F EZ Rental
G Car for a Day
H Rent-a-Car
J EZ Rental and Rent-a-Car had the same increase.

Elizabeth is buying terra cotta pots to decorate and use as party favors and decorations at an upcoming reception. She needs 72 small pots, 12 large pots, and 12 extra-large pots. Elizabeth calculated the price of the terra cotta pots using this information: small pots cost $\$ 1.00$ each, large pots cost $\$ 2.00$ each, and extra-large pots cost $\$ 2.50$ each. Use this information to do Numbers 11 through 12.
11. Elizabeth calculated that the total cost of the pots would be $\$ 96.00$. What error did she make?

A She calculated the cost of small pots only.
B She calculated the cost of large pots and extra-large pots only.
C She calculated the cost of small pots and large pots only.
D She calculated the cost of small pots and extra-large pots only.
12. After the reception, Elizabeth had 2 of each size pot left over. She figured that she could return them for a refund of $\$ 9.00$. What error did she make?

F She calculated the cost of small pots only.
G She calculated the cost of large pots and extra-large pots only.
H She calculated the cost of small pots and large pots only.
$J$ She calculated the cost of small pots and extra-large pots only.
13. Luis is sawing a board into 6 pieces. He knows that it will take him about 2 minutes to make each cut, so he estimates that the job will take him about 12 minutes. What error did he make?

A He underestimated the time he needs to make a cut.
B He determined that 6 cuts were needed.
C He figured that he would pick up his speed as he worked.
D He determined that the pieces had to be the same size.

Leticia is redecorating her room. The room is rectangular and measures 12 feet by 18 feet. The ceilings are 9 feet high. There are two windows, and each window is 3.5 feet wide and 4 feet high. Use this information to do Numbers 14 through 17.
14. Leticia is going to paint the walls of her room sage green. She plans to give each wall two coats of paint and needs to know how many gallons of paint she should buy. What information does Leticia need to decide how many gallons of paint she should buy?

F What does each gallon of paint cost?
G How long will it take her to complete one coat?
H How many square feet will a gallon of paint cover?
J How long will she have to wait before applying a second coat?
15. Leticia is going to buy a carpet for her floor. She knows the area of the floor, the price per square yard of carpet, and the price of the pad she will need to place beneath it. She also knows the sales tax rate, the price for installation, and the amount of time she will have to wait for it to be delivered. What information is not needed to find the total cost of the carpet?

A the price of the pad
$B$ the price for installation
C the amount of time she will have to wait for delivery
D the price per square yard for the carpet
16. Leticia is buying new bedroom furniture that includes a 4 -post bed. The cost is $\$ 1,150$, and tax and delivery charges are not included. She shopped at four stores before she decided to buy the furniture set. Which of the following questions must Leticia answer to figure out how much she is paying for the 4-post bed?

F How many pieces of furniture are in the bedroom set?
G How much will the delivery charges be for the entire bedroom set?

H What was the average price of beds at the stores in which she shopped?
$J$ What is the cost of the other pieces of furniture in the bedroom set?
17. Leticia is making curtains for the two windows. She determined that she needs 6 yards of fabric per window. The fabric she has selected costs $\$ 6.95$ per yard and comes in three colors. How much will it cost Leticia, before sales tax, to buy the fabric for the curtains?

A $\$ 13.90$
B $\$ 20.85$
C $\$ 41.70$
D $\$ 83.40$
18. Manny's Motors offers three payment plans for a particular new car. For each plan, the customer pays $\$ 10,000$ down. The two-year payment plan has $\$ 400$ monthly payments. The three-year plan has $\$ 300$ monthly payments. The four-year plan has monthly payments of $\$ 250$.

Naomi is purchasing a car using one of Manny's payment plans. Which plan will give her the lowest price for the car?

F two-year plan
G three-year plan
H four-year plan
J All plans will give the same price.
19. At a restaurant, Juan ordered an appetizer for $\$ 4.95$, a main course for twice that price, a drink for $\$ 3.50$ and a dessert for $\$ 6.65$. If he left a $20 \%$ tip, how much did he tip his server?

A $\$ 0.50$
B $\$ 5.00$
C $\$ 20.00$
D \$10.00
20. A shirt that was regularly priced $\$ 40.00$ is on sale for $25 \%$ off. Greg calculated that the sale price would be $\$ 10.00$. What error did he make?

F He found the amount he would save.
G He subtracted $\$ 25.00$ from $\$ 40.00$ to find the sale price.
H He multiplied $\$ 40$ by 0.025 to find the sale price.
J He found the sales tax for the shirt.

