

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

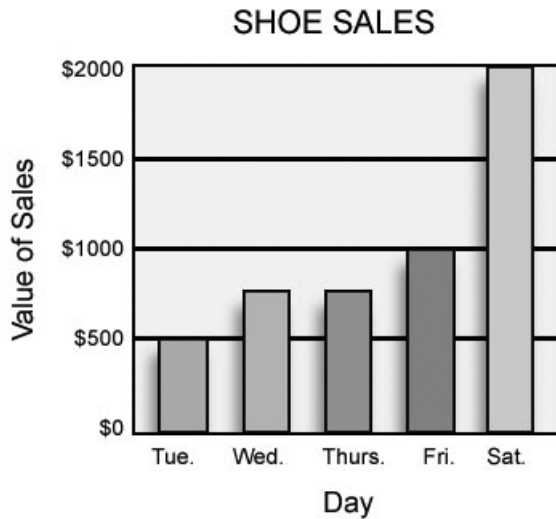
## Sample Question

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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Hal runs a shoe store. This graph shows the value of sales on five days last week. Study the graph. Then do Numbers 1 through 2.



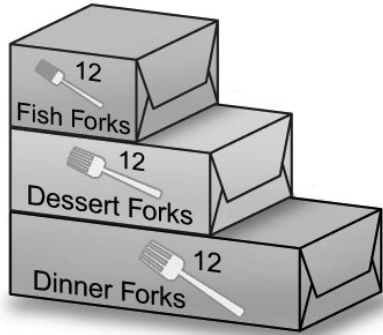
- At the end of the work day, Hal wants to know the value of all sales for the last seven days. What information does he need to answer this question?
  - the difference in sales between the best and worst days
  - the value of sales on Sunday and Monday
  - the number of hours his store was open
  - the total number of pairs of shoes sold
- Which two days have a combined sales value that is nearest to the value of shoe sales on Saturday?
  - Wednesday and Thursday
  - Tuesday and Wednesday
  - Wednesday and Friday
  - Tuesday and Friday

For vacation, the Ortiz family plans to travel 250 miles to Star Lake where they will stay in a cabin for 5 nights. The sign shows cabin rates per night. Use this information to do Numbers 3 through 4.

Cabin Rates	
\$75.00	per night
\$ 9.00	tax per night

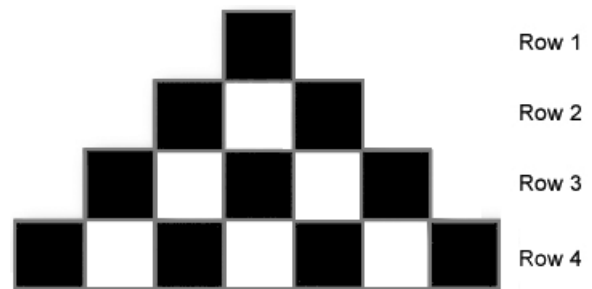
- Mr. Ortiz wants to know the total cost of staying in the cabin. What information is **not** needed to find the total cost of staying in the cabin?
  - taxes
  - cost per night
  - number of nights
  - distance traveled
- Mr. and Mrs. Ortiz will split the driving. Each will drive for 60 minutes and then rest while the other person drives. What information is needed to figure out how many times each driver will rest?
  - speed limit on the highway
  - number of passengers in the car
  - the total driving time of the trip
  - the route number

5. Taylor buys forks for a restaurant. He gets two boxes each of dinner forks, dessert forks, and fish forks. Which of these expressions can be used to find the total number of forks Taylor buys?



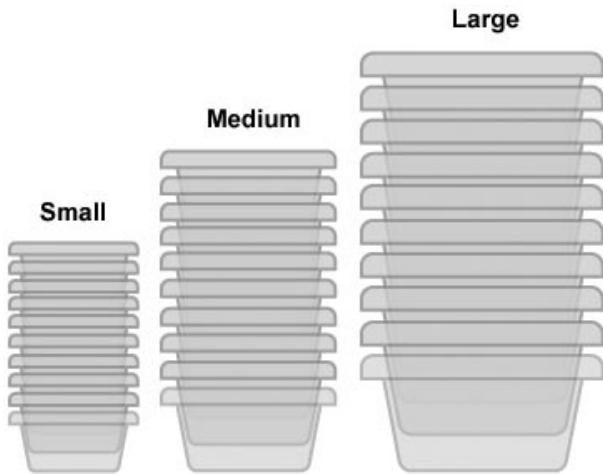
- A  $2 + 3 + 12$
- B  $12 \div 2$
- C  $3 \times 12$
- D  $2 \times 3 \times 12$

Kevin is making a pattern using black and white blocks. Study the pattern. Then do Numbers 6 through 7.



6. How many black blocks will Kevin need to complete row 6?
- F 6
  - G 5
  - H 9
  - J 11
7. Which of these expressions can be used to find the **total** number of blocks Kevin needs to extend his pattern to 6 rows?
- A  $1 \times 3 \times 5 \times 9 \times 11$
  - B  $1 + 3 + 5 + 7 + 9 + 11$
  - C  $1 + 2 + 3 + 4 + 5 + 6$
  - D  $0 + 1 + 2 + 3 + 4 + 5$

Ellen works at a deli. She packs orders in small, medium, or large plastic tubs. Ellen stacks the tubs in groups of 10 on her counter. Study the picture. Then do Numbers 8 through 11.



8. Which of these expressions can be used to find the total number of plastic containers Ellen has stacked on the counter?
- F  $3 \times 3$
  - G  $3 + 10$
  - H  $3 \times 10$
  - J  $10 - 3$
9. After the lunch rush, Ellen had used up all the small containers and half the large containers. Which of these expressions can be used to find the number of plastic containers still on the counter?
- A  $30 - 10 - 5$
  - B  $30 \times \frac{1}{2} - 10$
  - C  $30 - 10 - \frac{1}{2}$
  - D  $30 \div 3 - 5$
10. Ellen buys the plastic containers in large quantities to get the lowest price. She pays \$2.00 for 100 small containers, \$3.00 for 100 medium containers, and \$4.00 for 100 large containers. What is Ellen's cost for one medium-size container?
- F \$3.00
  - G \$0.30
  - H \$0.02
  - J \$0.03
11. Ellen had a busy weekend at the deli. She used 500 medium containers at a cost of \$3.00 per 100 containers. How much did medium containers cost Ellen that weekend?
- A \$15.00
  - B \$10.00
  - C \$20.00
  - D \$30.00

This sign gives information about four rides at a carnival. Study the sign. Then do Numbers 12 through 15.

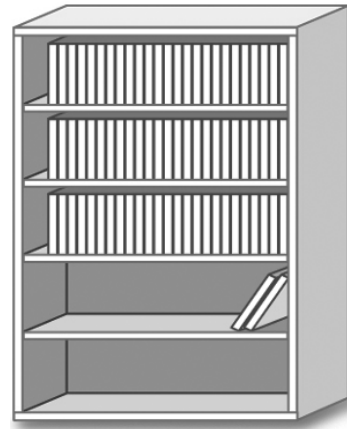
Ride	Seats	Cost
G-Force Flume	24	\$3.50
Ghost Coaster	60	\$4.00
Lunar Looper	36	\$2.25
Wonder Wheel	96	\$1.75

12. Dawn and her friends go the carnival. Which of the following information is needed to figure out how many rides they can afford to take?
- F the number of people in line for each ride
  - G the time the carnival ends
  - H the number of seats on each ride
  - J the amount of money they have to spend
13. Dawn went on each carnival ride once. How much money did she spend on rides?
- A \$11.50
  - B \$11.40
  - C \$10.50
  - D \$12.50
14. Dawn's friend Tina spent exactly \$4.00 to go on two different rides. Which two rides did Tina choose to go on?
- F Ghost Coaster and Wonder Wheel
  - G Lunar Looper and Wonder Wheel
  - H G-Force Flume and Wonder Wheel
  - J Lunar Looper and G-Force Flume
15. Which expense is **not** needed to figure out the total cost for a visit to the carnival?
- A the cost of transportation to and from the carnival
  - B the cost of general admission to the carnival
  - C the cost of electricity to run the rides
  - D the cost of food and drinks

Gustav was born in 1974. He got married in 1996. His daughter was born in 1999. His son was born two years later. Then in 2003, he bought a new house. Use this information to do Numbers 16 through 17.

16. Which piece of information is needed to find the year when Gustav's son was born?
- F the year Gustav was born
  - G the year Gustav got married
  - H the year Gustav's daughter was born
  - J the year Gustav bought his new house
17. Gustav used to pay \$875 each month in rent. He now pays \$962 each month for his mortgage payment. How much more does he pay each month?
- A \$187
  - B \$93
  - C \$113
  - D \$87

Fatima got a new CD rack. Each of its five shelves can hold 25 CDs. Study the diagram. Then do Numbers 18 through 19.



18. Which of these expressions can be used to show the total number of CDs Fatima has placed on her CD rack?
- F  $(3 \times 25) \times 2$
  - G  $(3 \times 25) + 2$
  - H  $(3 + 2) \times 25$
  - J  $25 + (3 \times 2)$
19. Which expression can be used to show how many more CDs will fit on the rack?
- A  $25 + (25 - 2)$
  - B  $25 + 2$
  - C  $25 \times (25 - 2)$
  - D  $25 \times 2$

20. Jenny spent \$33 on a soccer ball, soccer shorts, tube socks, and shin guards. The soccer shorts were \$12. Tube socks were on sale for \$2.00. The shin guards cost \$13. She got a free headband. To find out how much Jenny spent on the soccer ball, which fact is **not** needed?
- F the sale price of tube socks
  - G the cost of shin guards
  - H the cost of soccer shorts
  - J the regular price of tube socks