## The Pennsylvania System of School Assessment



Mathematics Item and Scoring Sampler Grade 8

## MATHEMATICS

## A.2.1.1

1. What is the value of the expression $75 \div(3+2)^{2} \bullet 4$ ?
A 0.75
$75 \div 100$
B 12 *
C 23.1

$$
75 \div(9+4) \bullet 4
$$

D 30

$$
(75 \div 10) 4
$$

## A.2.2.1

2. In the United States, about 350 million cans of chicken noodle soup are sold per year. Of these cans, $60 \%$ are sold in the winter. About how many cans of chicken noodle soup are sold in the United States in the winter?

A $\quad 60$ million 60 from item

B $\quad 210$ million *
C 580 million


D 2100 million
$350 \times 6$
D.1.1.1
3. A pattern of numbers is shown below.

$$
1,3,7,15,31, \ldots
$$

The pattern continues. What is the next number in the pattern?

A 46

$$
15+31
$$

B 47
$16+31$
C 63 *
D 64

$$
2(31+1)
$$

## MATHEMATICS

## B.2.3.1

Use the figure below to answer question 4.

5. Which is closest to the circumference of the circle?

| A | 24 feet |
| :--- | :--- |
| B | 38 feet |

C 75 feet *
D 452 feet
area

## B.2.3.1

Use the diagram below to answer question 4.

4. A box that measures 10 inches high with a square base has a side length of 6 inches. What is the total volume of the box?

A 22 cubic inches
$10+10+6$
B 240 cubic inches
$6 \times 4 \times 10$
C 360 cubic inches *
D 960 cubic inches $\quad 10 \times 4 \times 6 \times 4$

## MATHEMATICS

## C.2.1.2

6. Max drew the triangle below.


Which diagram shows the triangle reflected (flipped) over the $y$-axis?
A

B

rotation and translation
C

reflection and translation
D

*
translation

## MATHEMATICS

## C.3.1.1

## Use the diagram below to answer

 question 7.
7. Which ordered pair identifies the location of vertex C?

A $(-3,-2)$ *


## D.4.1.4

8. The table below shows a plant's height every 3 months for 12 months.

PLANT HEIGHT

| Months <br> $(x)$ | Height <br> (in inches) <br> $(\boldsymbol{y})$ |
| :---: | :---: |
| 3 | 2 |
| 6 | 3 |
| 9 | 4 |
| 12 | 5 |

Which equation best represents the relationship of the data in the table?

A $y=3 x \quad$ attempt to explain $x$ column
B $y=x+1$ attempt to explain $y$ column
C $y=\frac{x}{2}-1$ relationship fits row four only
D $y=\frac{x}{3}+1$ *

## MATHEMATICS

## E.2.1.1

Use the stem-and-leaf plot below to answer question 9.

TEST SCORES

| 5 | 1 |  |  |  |  |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- |
| 6 | 2 |  |  |  |  |
| 7 | 0 | 1 | 2 | 2 | 8 |
| 8 | 0 | 1 | 8 |  |  |
| 9 | 1 | 1 | 1 |  |  |
| 10 | 0 |  |  |  |  |
|  |  |  |  |  |  |

Key: $2 \mid 3=23$
9. What is the median test score?
A 49
B 78

| Range |
| :--- |
| Mean (approx.) |

C 79*
D 91
Mode
E.4.1.2
10. The graph below shows the balance for Fred's savings account at the end of each month.


If this trend continues, which amount below would be the most reasonable prediction for his balance at the end of the $11^{\text {th }}$ month?
A $\$ 400$
$10^{\text {th }}$ month
B $\$ 435$ *
C $\$ 475$


## MATHEMATICS

## E. 2

11. A baseball coach compiled statistics of the number of games his team won during each of the last 20 seasons.
A. During each season, the team played 16 games. The range for the number of wins for the last 20 seasons is 16 . Based on this statistic, explain how you know that the team won all of its games in at least one season.

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11. Continued. Please refer to previous page for task explanation.
B. The mean number of wins for the last 20 seasons is 10.4 . In the $21^{\text {st }}$ season, the team won 14 games. What will be the new mean? Show all of your work. Explain why you did each step.
C. The median for the last 20 seasons was 7 wins. Arranged in order from least to greatest, the middle two seasons had wins of 6 games and 8 games. In the $21^{\text {st }}$ season, the team won 14 games. What will be the new median?

## MATHEMATICS

## A.2.2.2

12. Kyle went to the store to purchase some CDs during a " $30 \%$ off" discount sale.
A. After the discount, the price of 1 CD is $\$ 10.50$.

What was the price of the CD before the discount? Explain why you did each step.

## MATHEMATICS

## 12. Continued.

B. Kyle shopped for additional CDs in the clearance section. A sales clerk told Kyle that CDs in the clearance section do not get the $30 \%$ discount but are being sold for "Buy 2, get 1 free." The price of each CD in the clearance section is $\$ 12$.

Kyle decides to purchase 1 CD at the $\$ 10.50$ discount price and 6 CDs from the clearance section. He also has to pay $6 \%$ sales tax on the total price of the 7 CDs.

What is the total amount that Kyle must pay for his purchases? Show all your work. Explain why you did each step.

