



The Pennsylvania System of School Assessment

Mathematics Item and Scoring Sampler

SUPPLEMENT

2009–2010
Grade 7

MATHEMATICS

MULTIPLE-CHOICE ITEMS

Note: All percentages listed in the tables below the items have been rounded.

A.1.2.1

1. Between $\frac{1}{5}$ and $\frac{1}{4}$ of the students in a class received an A on a history test. Which decimal is between $\frac{1}{5}$ and $\frac{1}{4}$?

- A 0.17 *less than both fractions*
 B 0.23 *
 C 0.26 *thinks that $1/5 > 1/4$*
 D 0.32 *thinks that $1/5 > 1/4$*

| A | B | C | D |
|-----|-----|-----|----|
| 12% | 67% | 13% | 8% |

A.2.2.4

2. A store sells bags of 12 apples for \$3.60. What is the unit cost per apple?

- A \$0.30 *
 B \$0.33 *divided 12 by 36*
 C \$3.33 *divided 12 by 3.60, the bag price*
 D \$3.60 *confused unit cost with bag price*

| A | B | C | D |
|-----|----|-----|----|
| 82% | 7% | 10% | 2% |

A.3.1.1

During an assessment, students would not be permitted to use a calculator on item 3.

3. An icicle was 48.3 centimeters (cm) long one morning, and 39.9 cm long that evening. Which is the **closest estimate** of the change in the length of the icicle from morning to evening?

A 8 cm *

B 9 cm

*dropped both decimal values: $48 - 39 = 9$;
or rounded both up: $49 - 40 = 9$*

C 10 cm

*rounded both to nearest 10:
 $50 - 40 = 10$*

D 11 cm

*dropped both decimal values and
subtracted incorrectly: $48 - 39 = 11$*

| A | B | C | D |
|-----|-----|-----|----|
| 63% | 19% | 12% | 6% |

MATHEMATICS

A.3.2.1

4. Adrienne had 20 cups of flour. She used $7\frac{3}{4}$ cups of flour for a batch of bread and $3\frac{1}{3}$ cups of flour for a batch of cookies. How much flour did Adrienne have left after she baked the bread and cookies?

A $8\frac{11}{12}$ cups *

B 9 cups

$20 - (8 + 3)$, (rounded fractions)

C $11\frac{1}{12}$ cups

$7 - \frac{3}{4} + 3 - \frac{1}{3}$ (amount used)

D $15\frac{7}{12}$ cups

$20 - 7 - \frac{3}{4} + 3 - \frac{1}{3}$

| A | B | C | D |
|-----|-----|-----|----|
| 59% | 14% | 22% | 5% |

B.1.1.1

Note: In the actual test, conversion charts will be provided.

5. A bucket contains 6 quarts 1 pint of paint. Ann pours 3 quarts 1 pint of additional paint into the bucket. What is the total amount of paint in the bucket?

A 2 gallons 1 quart

forgot about 2 pints

B 2 gallons 2 quarts *

C 3 gallons 1 quart

used 3 quarts per gallon

D 4 gallons 1 quart 1 pint

converted incorrectly

| A | B | C | D |
|-----|-----|-----|-----|
| 21% | 54% | 15% | 10% |

MATHEMATICS

B.2.2.2

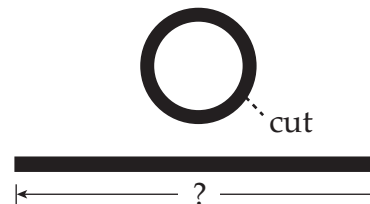
6. On a drawing of a house, the length of the living room is 3.25 inches. The scale of the drawing is 1 inch : 4 feet (ft). What is the actual length of the living room?

- A 1.23 ft *divided 4 by 3.25*
- B 7.25 ft *added 3.25 and 4*
- C 13.00 ft *
- D 14.77 ft *used 4 ft = 48 inches and divided 48 by 3.25, then rounded up*

| A | B | C | D |
|----|-----|-----|----|
| 4% | 14% | 77% | 5% |

C.1.1.1

7. Abe made a straight cut through a circular rubber band and then laid the rubber band flat, as shown below.



Which measure corresponds to the length of the cut rubber band?

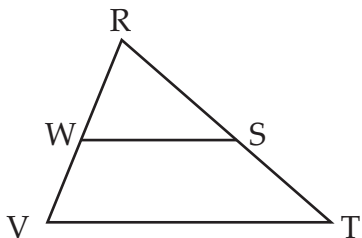
- A chord *distance from one point on the edge of a circle to another*
- B circumference *
- C diameter *distance from one point on the edge of a circle to another through the center*
- D radius *distance from the edge of a circle to the center*

| A | B | C | D |
|-----|-----|-----|----|
| 14% | 57% | 22% | 7% |

MATHEMATICS

C.1.2.2

8. Triangle RSW is similar to triangle RTV as shown below.



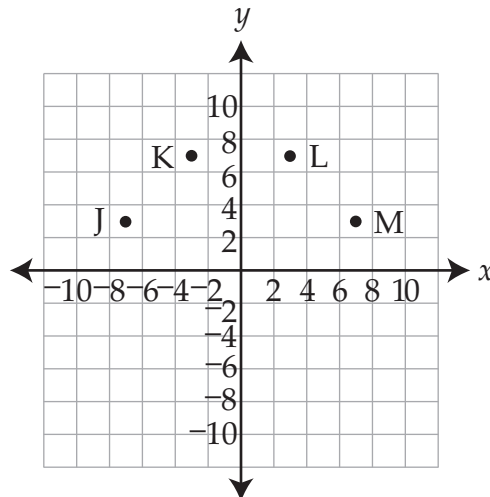
Which angle corresponds to $\angle RVT$?

- A $\angle RSW$
- B $\angle WRS$
- C $\angle RTV$
- D $\angle RWS$ *

| A | B | C | D |
|-----|----|-----|-----|
| 15% | 5% | 14% | 65% |

C.3.1.1

Use the coordinate plane below to answer question 9.



9. Which point is located at $(3, 7)$?

- A point J
- B point K
- C point L *
- D point M

| A | B | C | D |
|----|----|-----|----|
| 3% | 2% | 86% | 9% |

MATHEMATICS

D.1.1.1

10. The total amount of water a plant absorbed during the first five days of an experiment is shown below.

Plant Experiment

| Day | Total Amount of Water Absorbed During Experiment |
|-----|--|
| 1 | $1\frac{1}{2}$ cups |
| 2 | $2\frac{1}{4}$ cups |
| 3 | 3 cups |
| 4 | $3\frac{3}{4}$ cups |
| 5 | $4\frac{1}{2}$ cups |

The pattern continues. What is the total amount of water that the plant had absorbed by the end of the 6th day of the experiment?

- A $4\frac{3}{4}$ cups *added 1/4 instead of 3/4*
- B 5 cups *added 1/2 instead of 3/4*
- C $5\frac{1}{4}$ cups *
- D $5\frac{1}{2}$ cups *added 1 instead of 3/4*

| A | B | C | D |
|----|-----|-----|----|
| 8% | 20% | 68% | 4% |

D.2.1.1

11. Denisha has \$15 to buy seeds for her flower garden. The seeds cost \$1.25 per package. The equation below describes the number of seed packages (p) that Denisha will buy.

$$1.25p = 15$$

Which is the first step to find the value of p ?

- A add 1.25 to both sides
- B divide both sides by 1.25 *
- C multiply both sides by 1.25
- D subtract 1.25 from both sides

| A | B | C | D |
|----|-----|-----|----|
| 7% | 67% | 18% | 8% |

MATHEMATICS

D.2.1.2

Use the expression below to answer question 12.

$$2x^2 - xy + y$$

12. What is the value of the expression when $x = 16$ and $y = 4$?

A 4

in the first term incorrectly multiplied $2 \times 16 \times 2$; completed the rest correctly

B 452 *

C 964

in the first term incorrectly multiplied 2×16 then squared 32; completed the rest correctly

D 1,988

squared 16 and multiplied by 2; then worked left to right, disregarding order of operations

| A | B | C | D |
|----|-----|-----|----|
| 9% | 72% | 14% | 5% |

MATHEMATICS

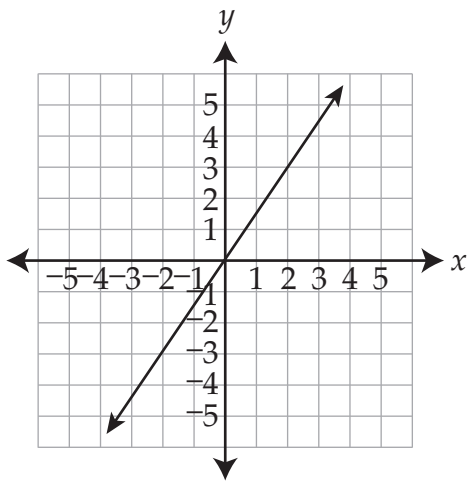
D.3.1.1

13. The table below shows the coordinates of some points on a line.

| x | y |
|-----|-----|
| -1 | -3 |
| 0 | -1 |
| 2 | 3 |
| 3 | 5 |

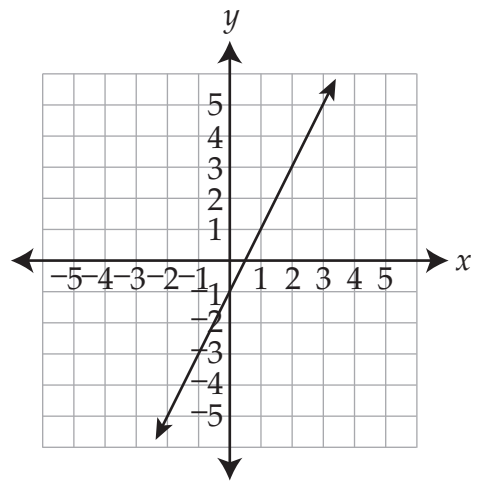
Which is a graph of the line represented by the coordinates in the table?

A



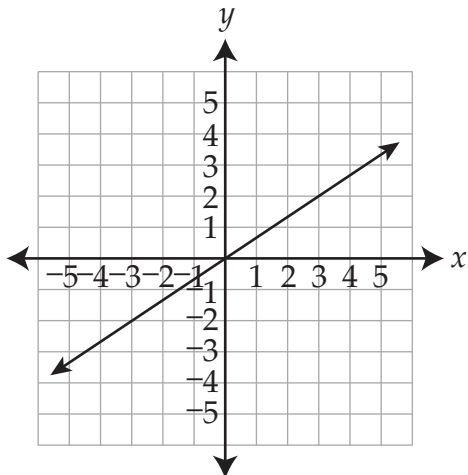
mistakenly used origin and (2, 3) only

B



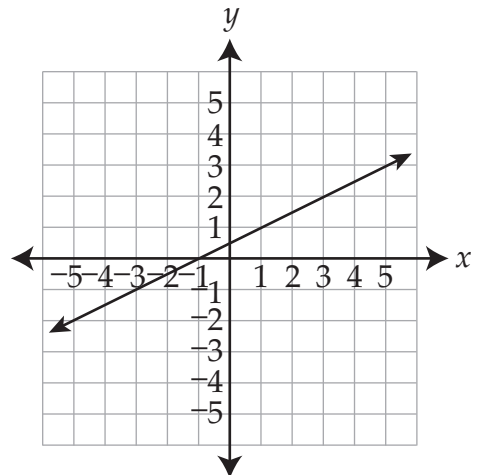
*

C



used origin and (3, 2), the reversed x and y values

D



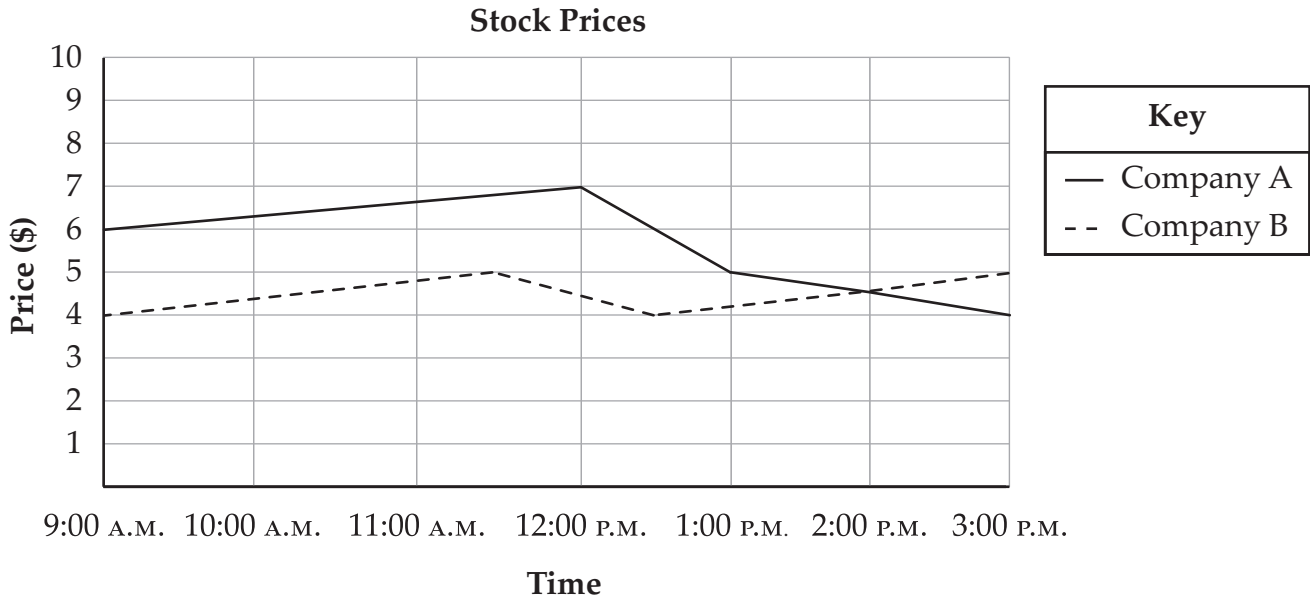
reversed x and y values

| A | B | C | D |
|-----|-----|-----|-----|
| 17% | 55% | 16% | 12% |

MATHEMATICS

E.1.1.1

14. The graph below shows the stock prices of 2 companies from 9:00 A.M. to 3:00 P.M. on Monday.



Based on the graph, at what time were the stock prices the same?

- A 9:00 A.M. *first time shown on the graph*
- B 12:00 P.M. *greatest difference*
- C 2:00 P.M. *
- D 3:00 P.M. *first time after graphs intersect*

| A | B | C | D |
|----|----|-----|----|
| 6% | 3% | 89% | 2% |

MATHEMATICS

E.2.1.2

15. The prices of 10 different backpacks at a store are listed below.

\$18, \$18, \$18, \$18, \$18,
\$18, \$18, \$18, \$50, \$50

Which statistical measure provides the **best** information about the typical price of a backpack at the store?

A mean

greater than price of typical backpack

B mode

*

C maximum

greater than price of typical backpack

D range

greater than price of typical backpack

| A | B | C | D |
|-----|-----|----|----|
| 23% | 64% | 4% | 8% |

E.3.1.3

16. The table below shows the number of different types of music CDs sold at a store last month.

CD Sales

| Type of Music | Number of CDs Sold |
|---------------|--------------------|
| blues | 120 |
| classical | 140 |
| country | 180 |
| jazz | 120 |
| pop | 360 |
| rock | 280 |

Based on the table, what is the **experimental** probability that one of these CDs chosen at random is a jazz CD?

A $\frac{1}{120}$

B $\frac{1}{10}$ *

C $\frac{1}{9}$

D $\frac{1}{6}$

| A | B | C | D |
|-----|-----|----|-----|
| 16% | 58% | 6% | 19% |

MATHEMATICS

OPEN-ENDED ITEM

D.3

17. Karen's cell phone company charges a per-minute fee with no other monthly fees. The table below shows the number of minutes used and the amount charged for some of Karen's phone calls last month.

Cell Phone Charges

| Length of Call (minutes) | Total Cost of Call |
|--------------------------|--------------------|
| 12 | \$0.48 |
| 14 | \$0.56 |
| 18 | \$0.72 |
| 21 | \$0.84 |
| 23 | \$0.92 |

- A. Explain how to find the cost of a 15-minute phone call.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

17. *Continued.* Please refer to the previous page for task explanation.

B. What is the total cost of a 15-minute phone call? Show all your work.

One month, Karen's total monthly cell phone bill was \$18.56.

C. What is the total number of minutes Karen used her cell phone? Show all your work.

| Score Point 4 | Score Point 3 | Score Point 2 | Score Point 1 | Score Point 0 |
|------------------|------------------|------------------|------------------|------------------|
| 24% | 20% | 19% | 10% | 27% |