



The Pennsylvania System of School Assessment



2005 – 2006

Mathematics Item and Scoring Sampler Grade 8

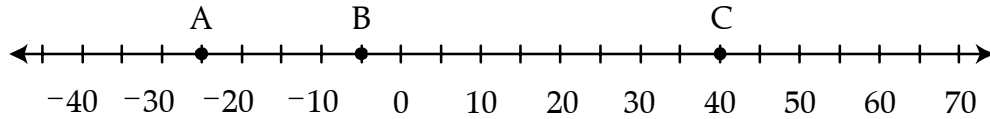
Pennsylvania Department of Education Bureau of Assessment and Accountability 2005–2006

MATHEMATICS

A.1.2.1

1. Point D will be graphed on the number line below using the following rules:

- Point D will be located to the right of point C.
- The distance from A to C will be equal to the distance from B to D.



Where will point D be located?

- A 50 *first label to right of C*
- B 55 *a point to right of C*
- C 60 *
- D 65 *distance A to C*

A.1.1.2

2. Pennsylvania has about 4.6×10^4 square miles of land. Montana has about 1.5×10^5 square miles of land. About how many more square miles does Montana have than Pennsylvania?

- A 104 square miles
- B 1,040 square miles
- C 10,400 square miles
- D 104,000 square miles *

A.1.2.2

3. The table below shows the amount of each ingredient in a flu medicine.

**Flu Medicine
Ingredients**

Ingredient	Amount (milligrams)
W	4.0558
X	0.982
Y	40.6
Z	0.009

Which list shows the amounts of the ingredients from **least** to **greatest**?

- A 40.6, 4.0558, 0.982, 0.009 *greatest to least*
- B 0.009, 40.6, 0.982, 4.0558 *opposite table order*
- C 0.009, 0.982, 4.0558, 40.6 *
- D 0.982, 0.009, 4.0558, 40.6 *reversed X and Z*

MATHEMATICS

B.1.1.1

4. A restaurant uses 381,000 grams of flour each day. How many kilograms of flour does the restaurant use each day?

- A 38.1 kilograms $\div 10,000$
 B 381 kilograms *
 C 3,810 kilograms $\div 100$
 D 38,100 kilograms $\div 10$

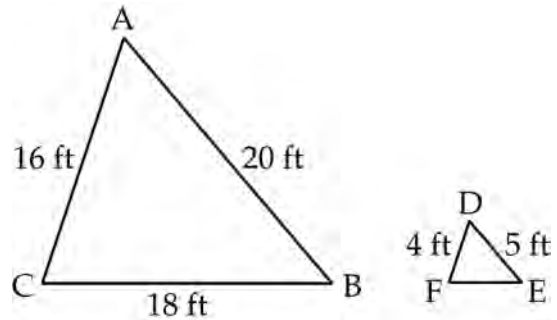
B.1.1.3

5. Enis made several long-distance calls this month. His phone bill showed that his total talk time was 4 hours and 6 minutes. What was Enis's total talk time in **seconds**?

- A 246 seconds $time = 246 minutes$
 B 14,406 seconds $4 hrs = 14,400 seconds + 6 (minutes)$
 C 14,760 seconds *
 D 16,560 seconds $4.6 hrs \times 3,600$

B.2.1.3

6. Triangle ABC is similar to triangle DEF.

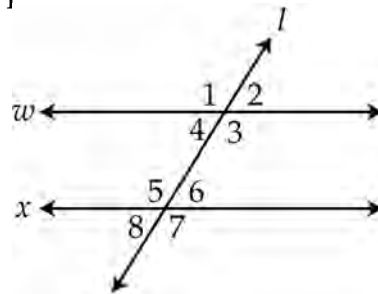


What is the length of \overline{EF} ?

- A $3\frac{1}{5}$ ft $16 \div 20 \times 4$
 B $3\frac{3}{5}$ ft $16 \times 4 \div 18$ (rounded up)
 C $4\frac{1}{2}$ ft *
 D $5\frac{1}{2}$ ft $20 \div 18 \times 5$ (rounded down)

B.2.2.3

7. In the figure below, line w and line x are parallel.



The measure of angle 4 is 70° . What is the measure of angle 7?

- A 20° $70 + 20$, complementary
 B 70° $\angle 7$ congruent to $\angle 4$
 C 90° right angle
 D 110° *

MATHEMATICS

B.2.3.1

8. Lou's square garden has a length and width of 10 feet. Lou is going to increase both the length and width by 4 feet. What will be the perimeter of the enlarged garden?

- | | |
|-------------|---------------------|
| A 40 feet | 4×10 |
| B 48 feet | $14 + 14 + 10 + 10$ |
| C 56 feet * | |
| D 140 feet | 10×14 |

C.1.1.3

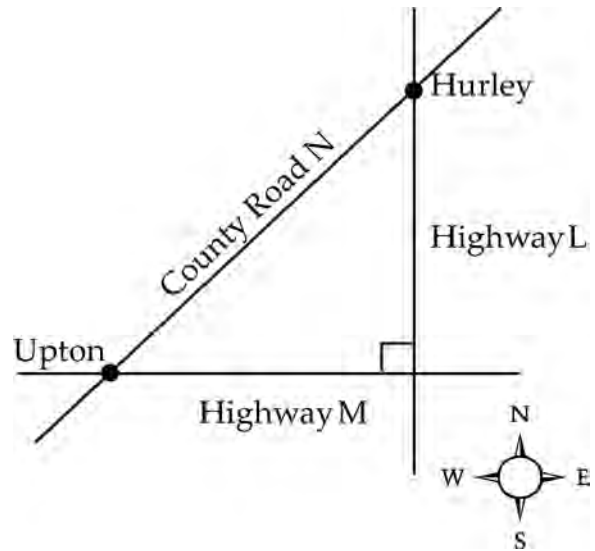
9. Sheyanne is using two clues to guess the name of a geometric figure.
- The figure has exactly one base.
 - The figure has exactly one vertex.

Which figure is described by the clues?

- A cone *
- B cube
- C cylinder
- D sphere

C.1.2.1

Use the figure below to answer question 10.



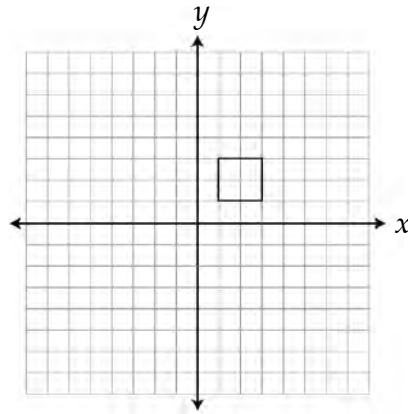
10. To travel from Hurley to Upton, Alberto drives 9 miles south on Highway L and then 12 miles west on Highway M. How far would Alberto have to drive if he took County Road N from Hurley to Upton?

- | | |
|--------------|---------------------------|
| A 3 miles | $12 - 9$ |
| B 8 miles | $\approx \sqrt{144 - 81}$ |
| C 15 miles * | |
| D 21 miles | $12 + 9$ |

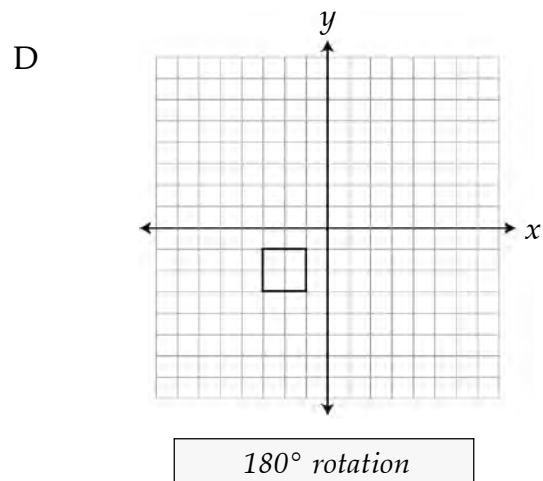
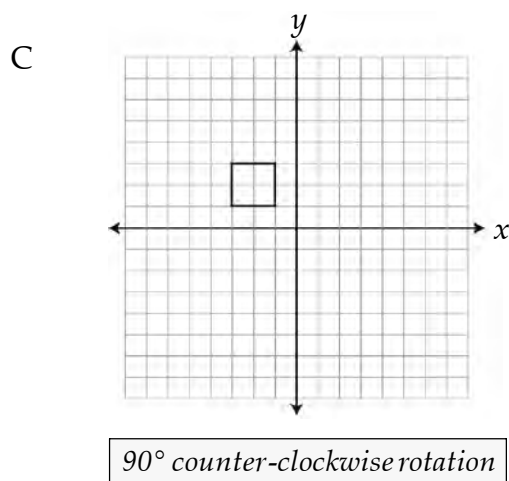
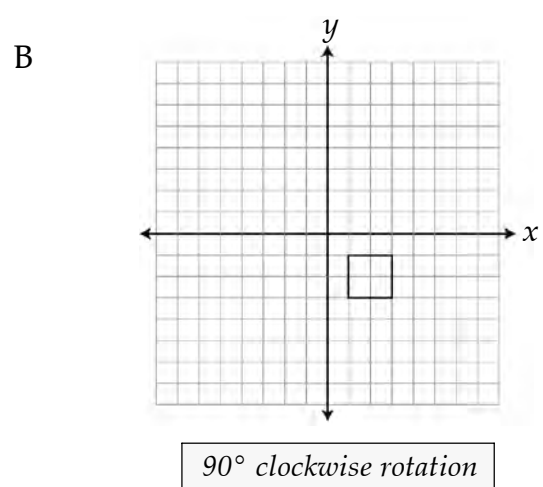
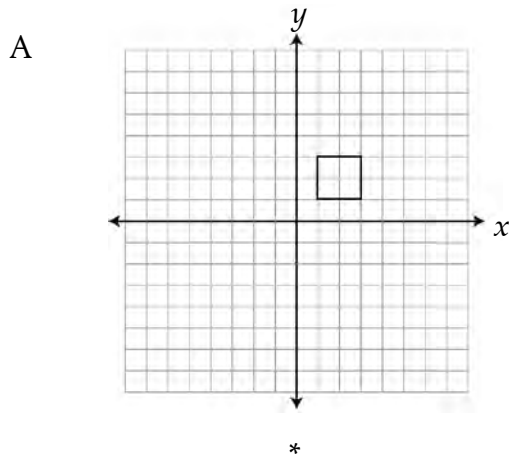
MATHEMATICS

C.2.1.1

Use the figure below to answer question 11.



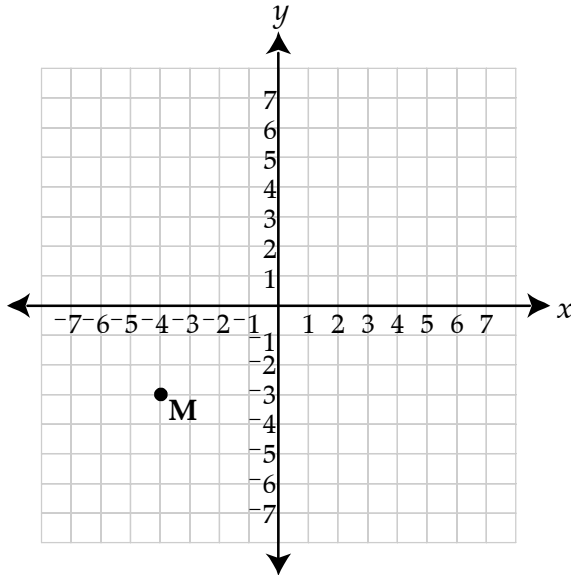
11. Which shows the figure rotated (turned) 360° about the origin?



MATHEMATICS

C.3.1.1

12. Point M is graphed below.



Which ordered pair names the location of point M?

- A $(-4, -3)$ *
- B $(-3, -4)$ *coordinates reversed*
- C $(3, -4)$ *coordinates reversed; incorrect sign*
- D $(4, -3)$ *opposite sign of x*

D.1.1.1

13. A pattern of numbers is shown below.

1, 4, 9, 16, 25, ...

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

- A 34 $25 - 16 = 9; 25 + 9 = 34$
- B 36 *
- C 41 $9 + 16 = 25; 25 + 16 = 41$
- D 49 7^2

D.1.1.2

14. The chart below shows the arrival times of trains from 4 different cities.

Train Arrival Times

From	Arrival Time
Boston, Massachusetts	9:14 A.M.
Orlando, Florida	10:07 A.M.
Phoenix, Arizona	11:00 A.M.
Seattle, Washington	11:53 A.M.
Houston, Texas	

The pattern of arrival times continues. At what time will the train from Houston, Texas, arrive?

- A 12:00 P.M. $14 - 7 = 7; 11:53 + 7 = 12:00$
- B 12:46 P.M. *
- C 1:00 P.M. $1 \text{ hour} + 7 \text{ minutes}$
- D 1:46 P.M. $12:46 + 1 \text{ hour}$

D.2.2.1

15. Petra gives Ian the clue below to help him guess a number.

When the number (x) is doubled and the product is reduced by five, the final result is less than 23.

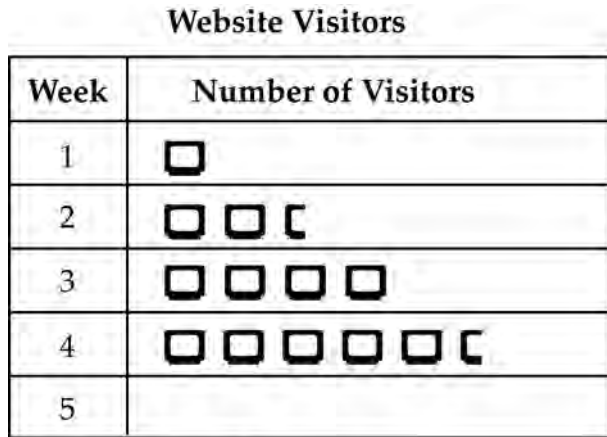
Which inequality correctly represents this clue?


- A $2x - 5 < 23$ *
- B $2(x - 5) < 23$ *doubles -5*
- C $2x - 5 > 23$ *reverses symbol*
- D $2(x - 5) > 23$ *reverses symbol; doubles -5*

MATHEMATICS

D.1.1.2

16. The pictograph below shows the number of visitors to a website.



 = 40 visitors

The pattern of the number of visitors continues. What will be the number of visitors in week 5?

- A 60 *adds $1\frac{1}{2}$ monitor; 6×10 visitors*
 B 70 *adds $1\frac{1}{2}$ monitors; 7×10 visitors*
 C 220 *week 4 total*
 D 280 *

D.2.1.1

17. What is the value of n in the equation $4n - 4 = 20$?

- A 4 $(20 - 4) \div 4$
 B 6 *
 C 9 $20 \div 4 + 4$
 D 12 $20 - 4 - 4$

D.1.1.3

Use the table below to answer question 18.

x	y
1	3
2	6
3	9
4	12
5	15

18. Which function describes the pattern in the table?

- A $y = x + 3$ *y values $+ 3$ (top down)*
 B $3y = x$ *reverses x and y*
 C $y = 3x$ *
 D $y = x - 3$ *y values $- 3$ (bottom up)*

D.4.1.4

Use the table below to answer question 19.

x	y
2	3
3	5
4	7
5	9
6	11

19. Which function describes the pattern in the table?

- A $y = x - 1$ *incorrect coefficient*
 B $y = 2x + 2$ *incorrect constant*
 C $y = x + 2$ *$+ 2$ difference in y values*
 D $y = 2x - 1$ *

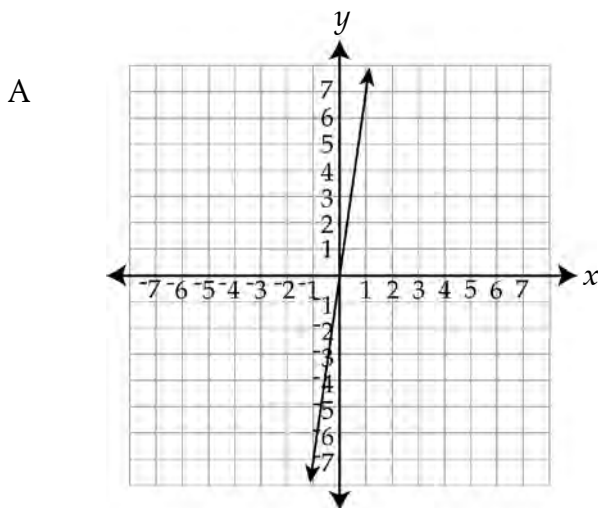
MATHEMATICS

D.4.1.2

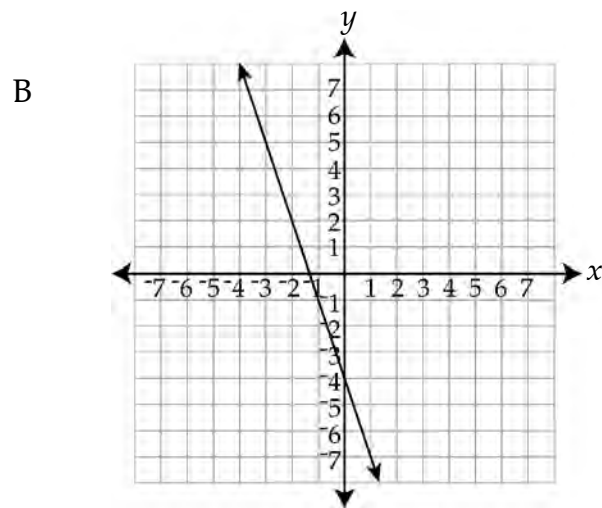
Use the table below to answer question 20.

x	y
-1	-7
0	-4
1	-1
2	2
3	5

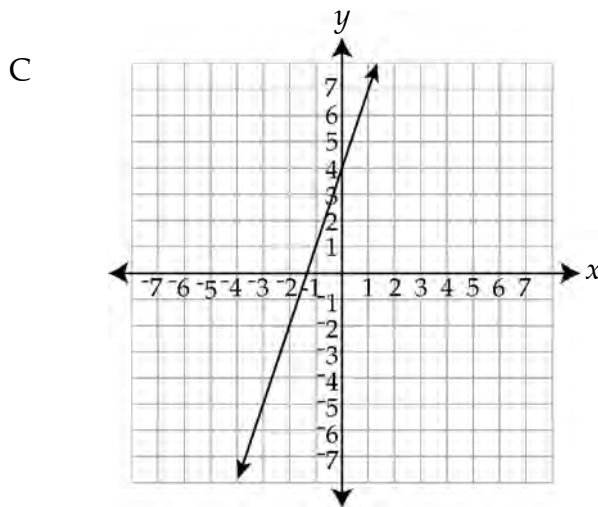
20. Which graph represents the relationship shown in the table?



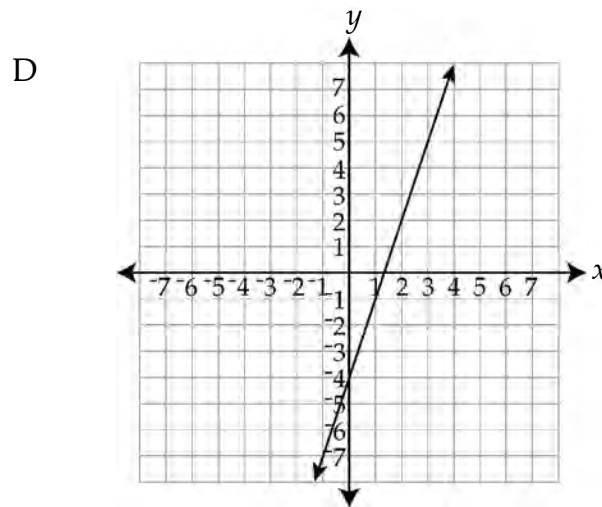
$(-1, -7)$ point on line



$(0, -4)$ point on line



$(1, 7)(-1, 1)$ reverses signs

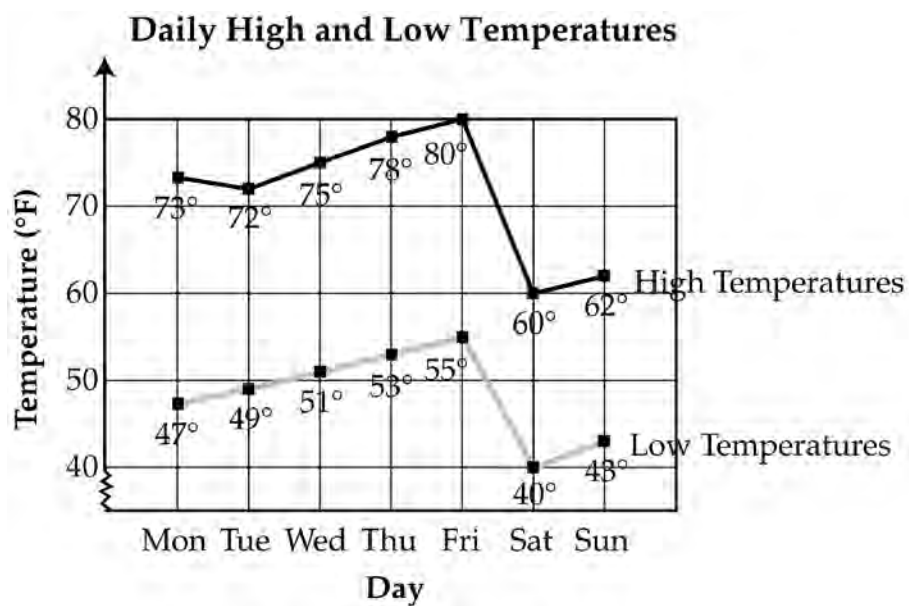


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MATHEMATICS

E.1.1.2

Use the graph below to answer question 21.



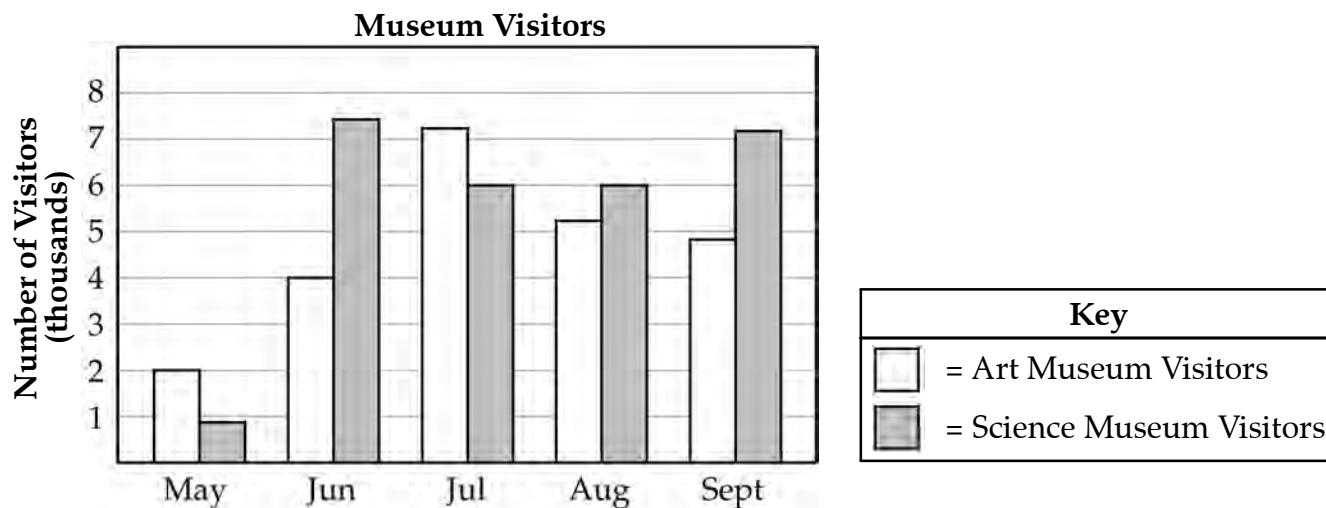
21. On which day was the difference between the high temperature and the low temperature the greatest?

- A Monday *
- B Tuesday
- C Wednesday
- D Thursday

MATHEMATICS

E.1.1.2

Use the graph below to answer question 22.



22. What is the approximate difference between the total number of museum visitors in May and the total number of museum visitors in September?

- A 3,000 *total visitors May*
- B 6,000 *difference in visitors to Science Museum*
- C 9,000 *
- D 15,000 *total visitors May and September*

MATHEMATICS

E.3.1.1

23. A box contains eleven cards numbered 1 through 11. Each card has a different number on it. A card is randomly selected from the box. What is the probability that the card will have an even number on it?

- A $\frac{1}{11}$ 1 even/11 numbers
- B $\frac{5}{11}$ *
- C $\frac{1}{2}$ 50% chance
- D $\frac{5}{6}$ 5 even/6 odd

E.2.1.1

Use the stem-and-leaf plot below to answer question 24.

Plant Heights
(in cm)

3	0 0 3
4	5 6 6 8
5	0 0 2 5 7
6	1 1 3 3 3 4
7	0 0 2 2 5
8	2 4 4 8

Key 2 8 = 28

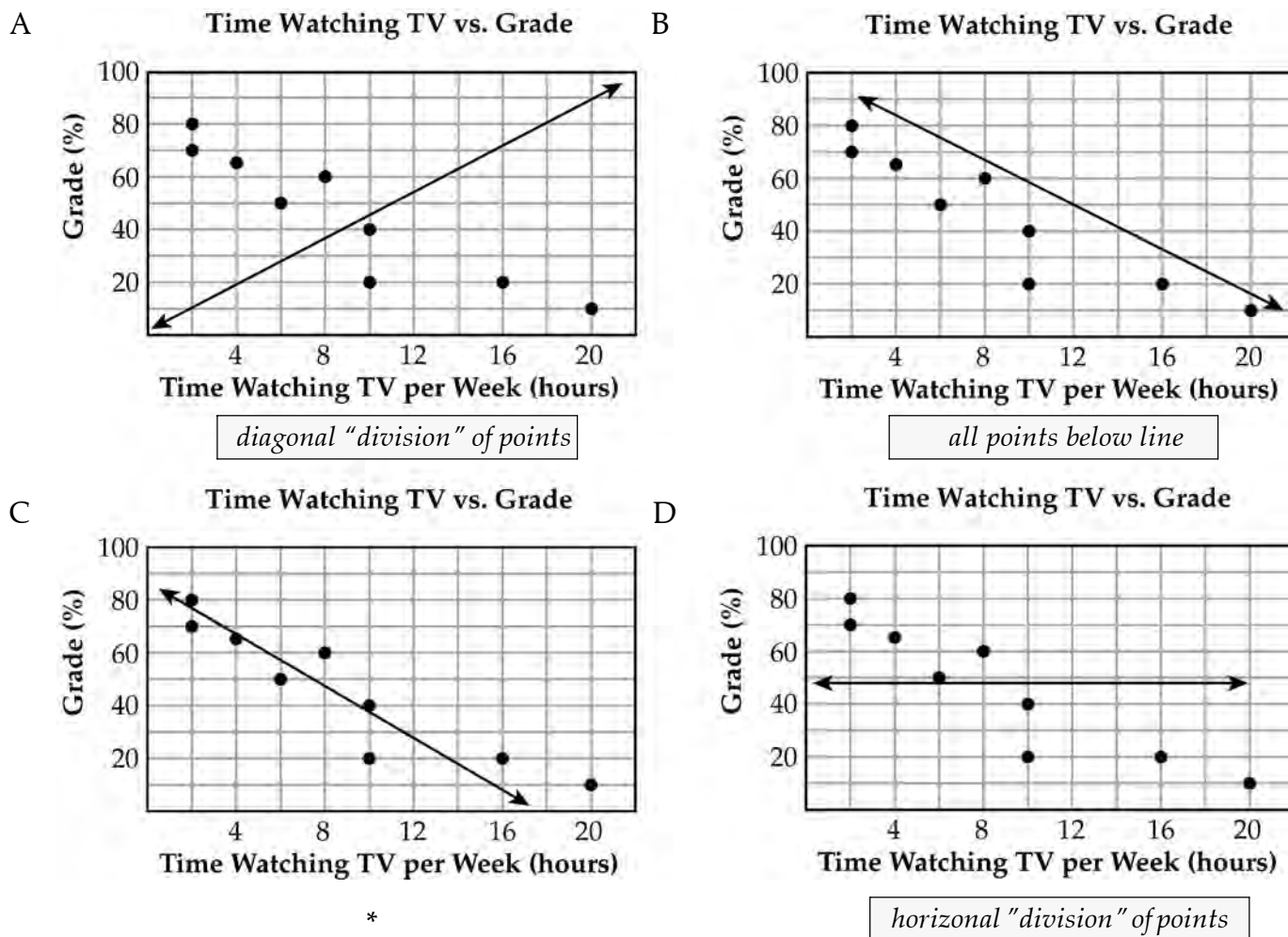
24. What is the **mode** of the plant heights?

- A 30 cm first number; 2 occurrences
- B 46 cm 2 occurrences
- C 61 cm median
- D 63 cm *

MATHEMATICS

E.4.1.1

25. Which graph shows a line of best fit for the scatter plot?



MATHEMATICS

A.2

26. Susan received the two coupons shown below to use at a clothing store.

Coupon A

Take \$5.00
off any purchase of
\$10.00
or more

Coupon B

Take
25%
off any purchase

- A. Susan is purchasing a \$15.00 item. Which coupon should she use to save the most money? Show all your work.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

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

- B.** For what priced item will both coupons save the exact same amount? Show all your work **and** explain your thinking.

MATHEMATICS

E.3

27. Alice, Ben, Carlos, and DeAndre were standing in line in the lunchroom. DeAndre was the first person in line.

A. In how many different ways could Alice, Ben, and Carlos be positioned second, third, and fourth? Show all your work **and** explain your thinking.

GO TO THE NEXT PAGE TO FINISH THE QUESTION.

MATHEMATICS

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

B. The sign below was hanging in the lunchroom.

Sandwiches	Fruits	Beverages
Cheese	Apple	Juice
Ham	Banana	Lemonade
Turkey		Milk

How many different combinations of 1 sandwich, 1 fruit, and 1 beverage are possible? Show all your work **and** explain your thinking.