SECTION 5: QUANTITATIVE REASONING

35 minutes • 20 questions

(The paper-and-pencil version will have 25 questions to be completed in 40 minutes.)

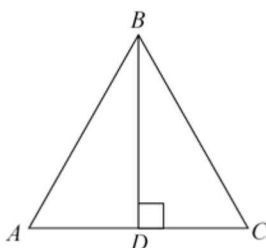For each question, follow the specific directions and choose the best answer.

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- Coordinate systems, such as *xy*-planes and number lines, *are* drawn to scale. Therefore, you can read, estimate, or compare quantities in such figures by sight or by measurement.

- Graphical data presentations, such as bar graphs, circle graphs, and line graphs, *are* drawn to scale. Therefore, you can read, estimate, or compare data values by sight or by measurement.

FOR QUESTIONS 1–8, COMPARE QUANTITY A AND QUANTITY B. SOME QUESTIONS WILL HAVE ADDITIONAL INFORMATION ABOVE THE TWO QUANTITIES TO USE IN DETERMINING YOUR ANSWER.

$$w < x < y < z$$

1.   Quantity A   Quantity B

                    $w + y$ $x + z$

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

2.

Quantity A	Quantity B
The number of dimes in $5.10	The number of pennies in 2 quarters

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

3.

Quantity A	Quantity B
$\dfrac{4}{3}\left(\dfrac{1}{2}\right)\left(\dfrac{11}{9}\right)$	$\dfrac{3}{4}\left(\dfrac{15}{16}\right)\left(\dfrac{15}{12}\right)$

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

$$\frac{x}{y} = 12$$

4.

Quantity A	Quantity B
x	y

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

Given triangle *ABC*

Where *AB* = *BC* = *CA*

5.

Quantity A	Quantity B
Value of an interior angle	60°

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

6.

Quantity A	Quantity B
$\angle A$	$\angle C$

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

The above shape is made up of 5 congruent squares. The area of the shape is 180.

7.

Quantity A	Quantity B
84	The perimeter of the shape

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

8.

Quantity A	Quantity B
$11^4 \times 11^5$	11^9

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

Questions 9–20 have several formats. Unless the directions state otherwise, choose one answer choice. For Numeric Entry questions, follow the instructions below.

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9. If the salesperson receives a $5,500 commission on the sale of a yacht, how much did the yacht sell for if the commission rate is 5%?
   (A) $110
   (B) $1,100
   (C) $11,000
   (D) $110,000
   (E) $1,100,000

FOR QUESTION 10, CHOOSE <u>ALL</u> THE ANSWERS THAT APPLY.

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10. Find all the prime numbers between 20 and 29.
    (A) 21
    (B) 22
    (C) 23
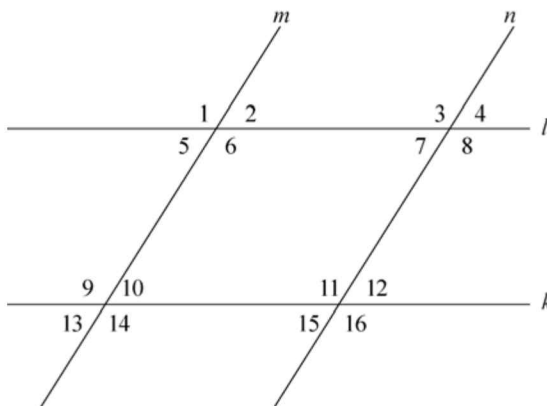   (D) 24
    (E) 25
    (F) 26
    (G) 27
    (H) 28

> **FOR QUESTION 11, ENTER YOUR ANSWER IN THE BOX.**

11. If a square mile is equal to 640 acres and an acre is equal to 43,560 square feet, how many square feet are there in $\frac{1}{17}$ of a square mile? Round your answers to two decimal places.

⬚ square feet

12. Evaluate $27^{\frac{2}{3}}$.

(A) 3

(B) 9

(C) 18

(D) 27

(E) 81

QUESTIONS 13–14 REFER TO THE FIGURE BELOW.

m is parallel to *n* and *k* is parallel to *l*

13. If $m\angle 3 = 2x$, and $m\angle 10 = 63$, find the value of *x*.

(A) 58.5

(B) 63

(C) 72

(D) 117

(E) 119.5

14. In the parallelogram formed by the intersection of the lines, what is the sum of the measures of the interior angles?

    (A) < 270
    (B) < 360
    (C)   360
    (D) > 360
    (E) > 540

QUESTION 15 REFERS TO THE TABLE BELOW.

PURCHASING-POWER PARITY (PPP)

Rank	Country	PPP Total (billion)	PPP/capita ($)	Population (million)
1.	European Union	10,840	28,600	379
2.	USA	10,400	37,600	290
3.	China	5,700	4,400	1,287
4.	Japan	3,550	28,000	127
5.	India	2,660	2,540	1,049
6.	Germany	2,180	26,600	82
7.	France	1,540	25,700	60
8.	Britain	1,520	25,300	60
9.	Italy	1,440	25,000	57
10.	Russia	1,350	9,300	144
11.	Brazil	1,340	7,600	182

15. Which country in the bottom 5 of population has the highest PPP Total?

    (A) Italy
    (B) Britain
    (C) France
    (D) Germany
    (E) Japan

16. What is the first month's interest payment on a 1-year loan of $34,000 at 8.28%?

    (A) $2346.00
    (B) $281.52
    (C) $234.60
    (D) $2815.20
    (E) $242.90

FOR QUESTIONS 17–18, CHOOSE <u>ALL</u> THE ANSWERS THAT APPLY.

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17. If *m, n,* and *p* are positive integers, and *m* is a factor of *n*, and *n* is a factor of *p*, which of the following statements are true?

(A) *m* is a factor of *p*

(B) *n* is a factor of p^3

(C) *p* is the product of *m(n)*

(D) *n* is a factor of *m(p)*

18. Find the numbers in the sequence from t_5 to t_7, using the formula $t_n = n(n-2)$.

(A) −1

(B) 0

(C) 3

(D) 8

(E) 15

(F) 24

(G) 35

(H) 48

FOR QUESTIONS 19–20, ENTER YOUR ANSWERS IN THE BOXES.

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19. It takes 3 electricians four 8-hour days to wire a house. If the general contractor wanted the house wired in three 8-hour days, how many electricians should he have hired?

☐

20. In a random bag of candy, there are 7 more caramels than lollipops. If lollipops cost a quarter and caramels cost a nickel, and the total cost of the bag is $2.75, how many caramels are in the bag?

☐

STOP

If you finish before the time is up, you may check your work in this section only.

SECTION 3: QUANTITATIVE REASONING

35 minutes • 20 questions

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FOR QUESTIONS 1–8, COMPARE QUANTITY A AND QUANTITY B. SOME QUESTIONS WILL HAVE ADDITIONAL INFORMATION ABOVE THE TWO QUANTITIES TO USE IN DETERMINING YOUR ANSWER.

1.
<u>Quantity A</u>	<u>Quantity B</u>
(12)(5)(9)(107)	(8)(104)(5)(12)

   (A) Quantity A is greater.
   (B) Quantity B is greater.
   (C) The two quantities are equal.
   (D) The relationship cannot be determined from the information given.

$$a \neq 0$$

a is the reciprocal of B.

2.   Quantity A   Quantity B

                      B a

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

3.   Quantity A   Quantity B

              $\left(\sqrt[3]{86}\right)^2$ 9

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.
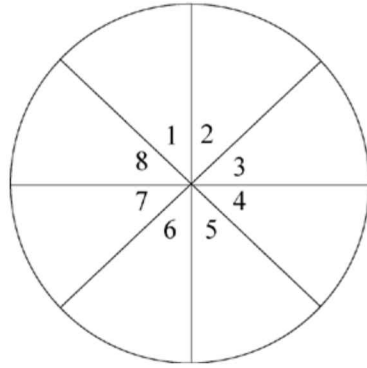
$$\frac{12z}{y} = \frac{x}{2}$$

4.   Quantity A   Quantity B

                     $8z$ $3xy$

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

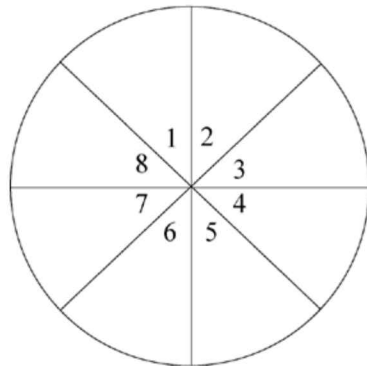(D) The relationship cannot be determined from the information given.

Mary is twice as old as Jay was 5 years ago. Jay is twice as old as Sue. All together they are 15 years older than Mary is now.
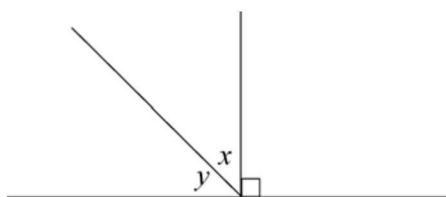
5.   Quantity A   Quantity B

                     Mary   Jay

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

6.

Quantity A	Quantity B
$m\angle 1 + m\angle 2 + m\angle 3 + m\angle 4$	$m\angle 3 + m\angle 4 + m\angle 5 + m\angle 6$

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

7.

Quantity A	Quantity B
$m\angle 3 + m\angle 4 + m\angle 5$	$m\angle 1 + m\angle 8 + m\angle 7$

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

practice test

8.

Quantity A	Quantity B
The mean of x and y	60

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined from the information given.

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9. What is the area of a circle with a diameter of 12?

(A) 6π

(B) 12π

(C) 24π

(D) 36π

(E) 144π

10. A bag of cement weighs 94 pounds and a bag of lime weighs 50 pounds. How many pounds does a shipment of 18 bags of cement and 5 bags of lime weigh?

(A) 250

(B) 1,370

(C) 1,442

(D) 1,692

(E) 1,942

11. Given $4f + 4g = 14$ and $15h + 15i = 60$, what is the mean of f, g, h, and i?

    (A) $1\frac{7}{8}$

    (B) $2\frac{1}{4}$

    (C) $8\frac{3}{5}$

    (D) $12\frac{3}{4}$

    (E) $18\frac{1}{2}$

12. From a well-shuffled deck of cards, what is the probability of drawing a red 8?

    (A) $\frac{1}{4}$

    (B) $\frac{1}{13}$

    (C) $\frac{2}{13}$

    (D) $\frac{1}{26}$

    (E) $\frac{1}{52}$

13. A right triangle has a base of 12 and a hypotenuse of 13. What is the height of the remaining leg?

    (A) 4
    (B) 5
    (C) 15
    (D) 20
    (E) 25

14. To manufacture soft pretzels, there is a built-in cost of $320 to start the machines and an additional cost for materials of $0.05 per pretzel. If the pretzels sell for 4 for $1.00, how many have to be sold to break even for the day?

    (A) 100
    (B) 160
    (C) 320
    (D) 1,600
    (E) 3,200

QUESTIONS 15–17 REFER TO THE TABLE BELOW.

Tahoe and Suburban Sales
1995–2009

	Tahoe	Suburban
1995	72,000	70,000
1996	127,000	92,000
1997	127,000	101,000
1998	131,000	110,000
1999	126,000	137,000
2000	150,000	132,000
2001	201,000	152,000
2002	209,000	150,000
2003	197,000	132,000
2004	188,000	118,000
2005	151,000	88,000
2006	160,000	76,000
2007	148,000	83,000
2008	90,000	52,000
2009	71,000	42,000

15. What is the range of vehicles sold between 1995 and 2009?

(A) 42,000

(B) 194,000

(C) 167,000

(D) 280,000

(E) 290,000

16. If the average price of a Tahoe in 2006 was $35,600 and the average price of a Suburban in 2006 was $57,700, what was the total sales number in dollars for both vehicles that year?

(A) 1.00812×10^{10}

(B) 1.65712×10^{10}

(C) 2.65712×10^{10}

(D) 2.98112×10^{10}

(E) 3.12912×10^{10}

FOR QUESTIONS 17–18, CHOOSE <u>ALL</u> THAT APPLY.

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17. What are the mode and the median of the number of Tahoes sold between 1995 and 2009?

(A) 71,000

(B) 127,000

(C) 131,000

(D) 148,000

(E) 151,000

(F) 180,000

18. What are the two answers to the equation $x^2 + 3x - 4 = 0$?

    (A) −4

    (B) −3

    (C) −1

    (D) 0

    (E) 1

    (F) 3

    (G) 4

FOR QUESTIONS 19–20, ENTER YOUR ANSWERS IN THE BOXES.

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19. Jack Rosato pays a flat rate business tax in his township of 0.438% on all invoices. He had invoices totaling $297,849.00 last year. What was his township tax bill? (Round your answer to two decimal places.)

$ [   ]

20. Justin is twice as old as Deven. In 5 years, twice the sum of their ages will be 104. How old is Justin now?

[   ]

STOP

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