GRE® Revised General Test: Quantitative Reasoning Question Types

Figures

This document includes figures, which appear on screen. Following each figure on screen is text describing that figure. Readers using visual presentations of the figures may choose to skip parts of the text describing the figure that begin with "Begin skippable figure description" and end with "End skippable figure description."

Mathematical Equations and Expressions

This document includes mathematical equations and expressions. Some of the mathematical equations and expressions are presented as graphics. In cases where a mathematical equation or expression is presented as a graphic, a verbal presentation is also given and the verbal presentation comes directly after the graphic presentation. The verbal presentation is in green font to assist readers in telling the two presentation-modes apart. Readers using audio alone can safely ignore the graphical presentations, and readers using visual presentations may ignore the verbal presentations.

Introduction

The revised Quantitative Reasoning section contains four types of questions:

Multiple-choice Questions — Select One Answer Choice

Multiple-choice Questions — Select One or More Answer Choices

Numeric Entry Questions

Quantitative Comparison Questions

Each question appears either independently as a discrete question or as part of a set of questions called a Data Interpretation set. All of the questions in a Data Interpretation set are based on the same data presented in tables, graphs, or other displays of data. Below are descriptions, directions, and samples of each type of question.

Multiple-Choice Questions — Select One Answer Choice

These questions are multiple-choice questions that ask you to select only one answer choice from a list of five choices.

Sample Questions

Directions: Select a single answer choice.

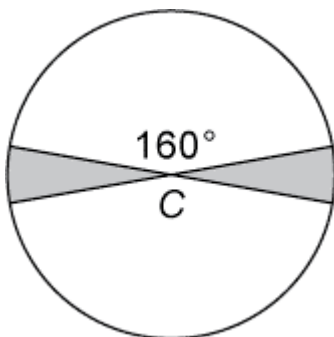Sample question 1 below is based on figure 1.

Figure 1

Begin skippable figure description.

Figure 1 is a circle with center *C*. Two diameters of the circle are drawn, dividing the circle into 4 sectors. Two nonadjacent sectors are shaded, and the central angle of one of the unshaded sectors measures 160 degrees.

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1.   Figure 1 above shows a circle with center *C* and radius 6. What is the sum of the areas of the two shaded regions?

A. 7.5π 7.5 pi

B. 6π 6 pi

C. 4.5π 4.5 pi

D. 4π 4 pi

E. 3π 3 pi

Answer: D (4π 4 pi)

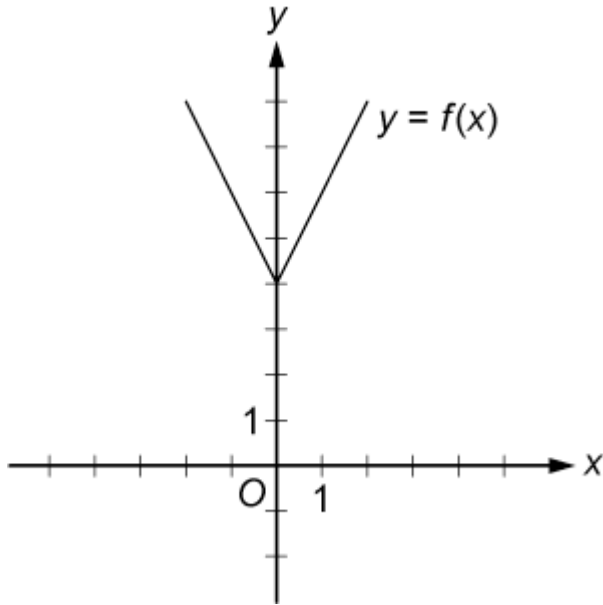Sample question 2 below is based on figure 2.

Figure 2

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Figure 2 shows the graph in the *x y* plane of the function f of *x* = the absolute value of 2*x*, end absolute value, + 4. There are equally spaced tick marks along the *x* axis and along the *y* axis. The first tick mark to the right of the origin, and the first tick mark above the origin, are both labeled 1.

The graph of the function f is in the shape of the letter V. It is above the *x* axis and is symmetric with respect to the *y* axis.

The lowest point on the graph of f is the point 0 comma 4 on the *y* axis.

Going leftward from the point 0 comma 4 the graph of f is a line that slants upward, passing through the point negative 2 comma 8.

Going rightward from the point 0 comma 4 the graph of f is a line that slants upward, passing through the point 2 comma 8.

End skippable figure description.

2.   Figure 2 above shows the graph of a function f, defined by $f(x) = |2x| + 4$ f of x = the absolute value of 2x, end absolute value, + 4 for all numbers x. For which of the following functions g defined for all numbers x does the graph of g intersect the graph of f ?

A. $g(x) = x - 2$ g of x = x minus 2

B. $g(x) = x + 3$ g of x = x + 3

C. $g(x) = 2x - 2$ g of x = 2x minus 2

D. $g(x) = 2x + 3$ g of x = 2x + 3

E. $g(x) = 3x - 2$ g of x = 3x minus 2

Answer: E ($g(x) = 3x - 2$ g of x = 3x minus 2)

Multiple-Choice Questions — Select One or More Answer Choices

These questions are multiple-choice questions that ask you to select one or more answer choices from a list of choices. A question may or may not specify the number of choices to select.

Sample Questions

Directions: Select one or more answer choices according to the specific question directions.

If the question does not specify how many answer choices to select, select all that apply.

The correct answer may be just one of the choices or may be as many as all of the choices, depending on the question.

No credit is given unless you select all of the correct choices and no others.

If the question specifies how many answer choices to select, select exactly that number of choices.

1.   Each employee of a certain company is in either Department X or Department Y, and there are more than twice as many employees in Department X as in Department Y. The average (arithmetic mean) salary is $25,000 for the employees in Department X and is $35,000 for the employees in Department Y. Which of the following amounts could be the average salary for all of the employees in the company?

Indicate <u>all</u> such amounts.

A. $26,000

B. $28,000

C. $29,000

D. $30,000

E. $31,000

F. $32,000

G. $34,000

Answer: A ($26,000) and B ($28,000)

2.   If f, *g*, and *h* are positive integers, f is a factor of *g*, and *g* is a factor of *h*, which of the following statements must be true?

Indicate all such statements.

A.   f is a factor of g^2. *g squared.*

B.   f is a factor of *gh*.

C.   f is a factor of $h - g$. *h minus g.*

Answer: A (f is a factor of g^2. *g squared*), B (f is a factor of *gh*.), and C (f is a factor of $h - g$. *h minus g*)

Numeric Entry Questions

Questions of this type ask you either to enter the answer as an integer or a decimal in a single answer box or to enter it as a fraction in two separate boxes — one for the numerator and one for the denominator. In the computer-administered test, the computer mouse and keyboard are used to enter the answer.

Sample Questions

<u>Directions:</u> Enter your answer in the answer box(es) below the question.

Equivalent forms of the correct answer, such as 2.5 and 2.50, are all correct. Fractions do not need to be reduced to lowest terms.

Enter the exact answer unless the question asks you to round your answer.

1.   If $x = 10^{-1}$, x = 10 to the power negative 1, what is the value of $\left(x + \frac{1}{x}\right)\left(\frac{1}{x}\right)$? open parenthesis, x + the fraction 1 over x, close parenthesis, times, open parenthesis, 1 over x, close parenthesis?

[ ] Answer Box

Answer: 101

2.   A university admitted 100 students who transferred from other institutions. Of these students, 34 transferred from two-year community colleges, 25 transferred from private four-year institutions, and the rest transferred from public four-year institutions. If two different students are to be selected at random from the 100 students, what is the probability that both students selected will be students who transferred from two-year community colleges?

Give your answer as a fraction.

 Fraction answer boxes

Answer: $\dfrac{17}{150}$ 17 over 150 (or any equivalent fraction).

Quantitative Comparison Questions

Questions of this type ask the examinee to compare two quantities — Quantity A and Quantity B — and then determine which of four statements describes the comparison.

Sample Questions

Directions: Compare Quantity A and Quantity B, using the additional information given, if any. Select one of the following four answer choices.

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 symbol that appears more than once in a question has the same meaning throughout the question.

1.

Quantity A: $x^2 + 1$ x squared + 1

Quantity B: $2x - 1$ 2x, minus 1

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.

Answer: A (Quantity A is greater.)
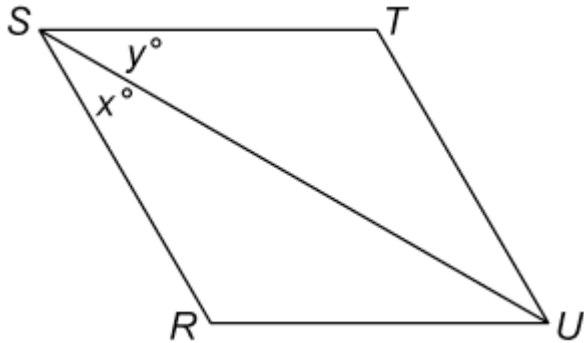
Sample question 2 below is based on figure 3.

Figure 3

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Figure 3 shows parallelogram *RSTU*. Sides *R U* and *S T* are horizontal, with *S T* above, and slightly to the left of side *R U*. Diagonal *S U*, which extends from vertex *S* at the upper left of the parallelogram to vertex *U* at the lower right of the parallelogram, divides the parallelogram into two triangles, *R S U* and *U S T*; and the angle at vertex S into 2 adjacent angles *R S U* and *U S T*. The measure of angle *R S U* is x degrees, and the measure of angle *U S T* is y degrees.

End skippable figure description.

2.

It is given that *RSTU* is a parallelogram.

Quantity A: *x*

Quantity B: *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.

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

Data Interpretation Sets

Data Interpretation questions are grouped together and refer to the same table, graph, or other data presentation. These questions ask you to interpret or analyze the given data. The types of questions may be Multiple-choice (both types) or Numeric Entry.

Sample Questions

Directions: Questions 1 to 3 are based on the data in the following table.

The table shows the percent change in monthly value of inventory at six businesses from April to June.

Business	Percent Change from April to May	Percent Change from May to June
G	+6	+8
K	+5	-5 minus 5

M	+2	+12
R	+8	-5 minus 5
V	+14	0
Z	+2	-10 minus 10

Note: Inventory values are determined at the end of each month.

1.	If the value of inventory at Business *K* was $30,000 for April, what was the value of inventory at Business *K* for June?

A.	$22,500

B.	$29,925

C.	$30,000

D.	$33,000

E.	$33,075

Answer: B ($29,925)

2.	At Business *M*, the value of inventory for May was what percent of the value of inventory for June?

Give your answer to the <u>nearest 0.1 percent.</u>

┌─────────────┐
│   │
└─────────────┘ % Answer box followed by percent sign

Answer: 89.3

3.   For which of the six businesses shown was the percent change in value of inventory from April to June greatest?
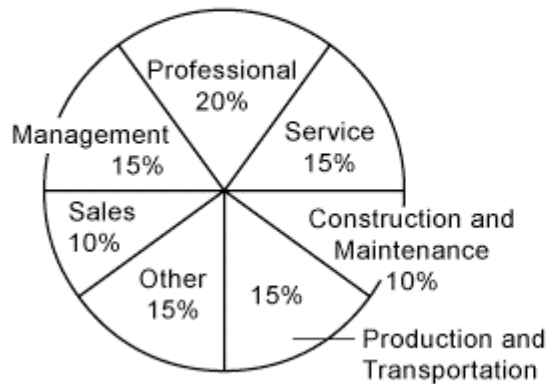

A.   *G*

B.   *K*

C.   *M*

D.   *R*

E.   *V*

Answer: A (Business *G*)

Directions: Questions 4 to 6 are based on the data shown in figure 4.

WORKFORCE OF COUNTRY X

Percent Distribution of Workforce by Employment Sector

Workforce in the Service Sector by Area and Gender

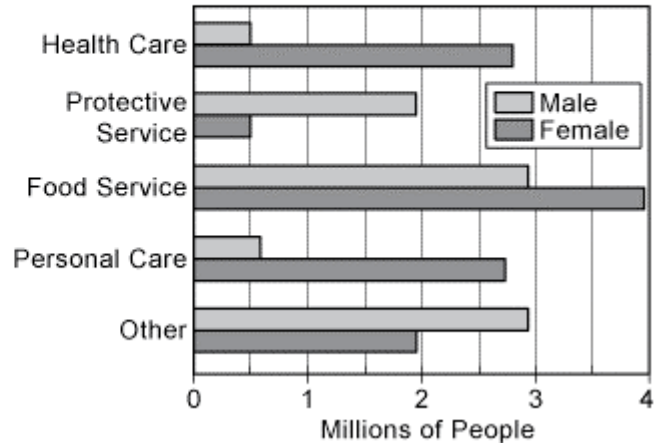Total Workforce: 140 million people

Figure 4

Begin skippable figure description.

The title of the data in figure 4 is "Workforce of Country X." The data consists of a pie chart and a bar graph. The title of the pie chart is "Percent Distribution of Workforce by Employment Sector" and the title of the bar graph is "Workforce in the Service Sector by Area and Gender."

The percent distribution of the workforce by employment sector in the pie chart is as follows:

Professional Sector 20%.

Service Sector 15%

Construction and Maintenance Sector 10%

Production and Transportation Sector 15%

Other Sector 15%

Sales Sector 10%

Management Sector 15%

The bar graph shows the number of males and females in each of the five service sectors. The bar graph has horizontal bars. The graph has a horizontal axis labeled Millions of People, with vertical gridlines in multiples of 0.5 million, from 0.5 million to 4 million. Five Service Sector areas are listed along the vertical axis. The data in the bar graph is as follows:

Health Care Sector, 0.5 million males and 2.75 females

Protective Service Sector, a little under 2 million males and 0.5 million females

Food Service Sector, a little under 3 million males and a little under 4 million females

Personal Care Sector, a little over 0.5 million males and about 2.75 million females

Other Sector, a little under 3 milllion males and a little under 2 million females

End skippable figure description.

4.   Approximately how many people are in the production and transportation sector of the workforce?

A.   9 million

B.   12 million

C.   15 million

D.   18 million

E.   21 million

Answer: E (21 million)

5. Approximately what fraction of the workforce in the food service area of the service sector is male?

A. $\frac{1}{4}$ 1 fourth

B. $\frac{1}{3}$ 1 third

C. $\frac{3}{7}$ 3 sevenths

D. $\frac{4}{7}$ 4 sevenths

E. $\frac{7}{10}$ 7 tenths

Answer: C ($\frac{3}{7}$ 3 sevenths)

6. In the workforce, the ratio of the number of males to the number of females is the same for the sales sector as it is for the protective service area of the service sector. Which of the following is closest to the number of females in the sales sector?

A. 2.9 million

B. 3.6 million

C. 10.4 million

D. 11.1 million

E.   14.0 million

Answer: A (2.9 million)