C4

Data, Statistics, and Probability

CHAPTER ASSIGNMENT · 65 MARKS

Name _____ Class _____ No. _____ Date _____

Answer every question in the space given. You may use your calculator unless a question says not to. Show your working. Give probabilities as fractions unless a question asks for another form.

Practice questions from *GED® Test Prep Mathematics*, Chapter 4 (Data, Statistics, and Probability), for classroom use. Where a book question needed a graph, the data is given in a table; where a graph's numbers could not be read into words, the questions are Guru Jazzy's own in the same style (Lessons 1–3 and 10, and some questions in Lessons 5 and 6). The Check yourself and Chapter quiz questions are Guru Jazzy's own.

Lesson 1 · Tables and pictographs

1.A The table shows the percent of 3-year-old children with each school-readiness skill.

Skill	2004	2010
Recognizes all letters	11%	17%
Counts to 20 or higher	37%	47%
Writes own name	22%	34%
Reads or pretends to read	66%	67%

(a) Which skill showed the least percent of increase from 2004 to 2010? [1]

A	B	C	D
Recognizes all letters	Counts to 20 or higher	Writes own name	Reads or pretends to read

(b) A town had 350 three-year-olds in 2010. If the table is true for the town, how many could write their own name? [1]

A	B	C	D
34	97	119	134

1.B A pictograph shows books checked out at three library branches in one week. Each book symbol stands for 40 books. North Branch shows 6½ symbols, South Branch shows 4 symbols and West Branch shows 5½ symbols.

(a) How many books did North Branch check out? [1]

(b) How many more books did North Branch check out than South Branch? [1]

(c) How many books did all three branches check out together? [1]

1.C The table shows the population of three counties.

County	2000	2010	Area (sq mi)
Bell	48,600	52,800	440
Evans	31,200	28,500	300
Grant	19,800	23,400	360

(a) On average, how many people per square mile lived in Bell County in 2010? [1]

(b) To the nearest percent, what was Evans County's percent of decrease from 2000 to 2010? [2]

Lesson 2 · Bar and line graphs

2.A A bar graph shows how many items a gift shop sold in one week. The bars read: T-shirts 150, books 45, toys 35, games 40.

(a) How many more T-shirts were sold than books and toys combined? [1]

A	B	C	D
40	70	80	90

(b) Half the games sold for \$16 and the rest for \$24. How much money did the shop take in for games? [1]

A	B	C	D
\$400	\$640	\$800	\$960

2.B A double-bar graph compares the cost of making four films with their ticket sales, in millions of dollars.

Film	Cost	Ticket sales
A	\$50	\$80
B	\$30	\$65
C	\$45	\$40
D	\$20	\$50

(a) Which film made the greatest profit? (*Profit = sales − cost.*) [1]

(b) Which film lost money? [1]

(c) To the nearest percent, Film B's cost was what percent of its ticket sales? [1]

2.C A line graph shows the number of visitors to a park each month: March 1,200; April 1,500; May 2,400; June 3,000; July 2,800.

(a) Between which two months did the number of visitors increase the most? [1]

A	B	C	D
March and April	April and May	May and June	June and July

(b) In which month did the number of visitors go down? [1]

(c) What was the percent of increase from March to April? [1]

Lesson 3 · Circle graphs

3.A A circle graph shows a sports camp's weekly budget of $2,250: lunches 35%, busing 20%, equipment 15%, staff 18%, umpires 8%, permits 4%.

(a) What percent of the budget is spent on equipment and umpires together? [1]

(b) What fraction of the budget is spent on permits? Write it in lowest terms. [1]

(c) How much does the camp spend each week on busing? [1]

3.B A circle graph shows how a records clerk spends a 40-hour work week: data entry 44%, preparing documents 25%, filing 19%, phone calls 12%.

(a) How many hours a week does the clerk spend preparing documents? [1]

A	B	C	D
10	15	25	30

(b) What percent of the clerk's time is spent on tasks other than data entry? [1]

A	B	C	D
25%	31%	44%	56%

3.C A circle graph shows where each dollar of a retirement fund goes: public bonds $0.30, stock market $0.32, real estate $0.08, savings $0.20, gold $0.10. Steve puts $120 into the fund. How much of it goes into public bonds?

A	B	C	D
$30	$36	$40	$84

Lesson 4 · Mean, median, mode and range

4.A For each data set, find the mean, median and mode. Round to the nearest hundredth or cent.

Data set	Mean	Median	Mode
Golf scores: 76, 82, 75, 87, 80, 82, 79			
Lunch costs: $4.50, $5.25, $4.50, $3.75, $4.50, $5.25, $6.10, $4.25			
Miles driven: 330, 286, 342, 300, 287			
Quiz scores: 90, 72, 86, 100, 88, 78, 88			
High temperatures: 96°, 103°, 98°, 101°, 98°, 100°, 100°, 97°, 98°, 100°			
Hours worked: 36, 40, 38, 40, 40			

4.B Six homes were sold in Fairfield Heights in June.

Home	Asking price	Selling price
#1	$98,500	$103,600
#2	$124,600	$116,500
#3	$105,800	$109,000
#4	$132,400	$124,800
#5	$122,400	$118,400
#6	$118,900	$116,500

(a) What was the mean asking price? [1]

A	B	C	D
$117,100	$116,500	$115,450	$114,800

(b) What was the median selling price? [1]

A	B	C	D
$112,750	$114,800	$116,500	$117,450

4.C What is the median of $268, $1258, $654, $1258, $900, $1558 and $852?

A	B	C	D
$1258	$964	$900	$852

4.D What is the mode of these points scored: 14, 17, 14, 12, 13, 15, 22 and 11?

A	B	C	D
13.5	14	14.75	16.5

Lesson 5 · Line plots

5.A The table shows how many students are in each class at a school this year. Draw a line plot of the data, with one x for each class. [2]

Students in the class	27	28	29	30	31	32
Number of classes	1	1	3	0	1	2

5.B Juana asked ten garden members how many types of vegetables they plant: 4, 3, 6, 2, 3, 2, 1, 8, 4, 3.

(a) Draw a line plot of the data on a number line from 0 to 8. [2]

(b) Which value has the highest frequency? [1]

A	B	C	D
2	3	4	8

(c) Which value is an outlier? [1]

Lesson 6 · Histograms

6.A Mike's employees took a skills test with scores from 200 to 1800.

Score range	Employees
200–399	15
400–599	22
600–799	35
800–999	62
1000–1199	80
1200–1399	69
1400–1599	47
1600–1800	20

(a) Sketch a histogram of the data. Label both axes. [2]

(b) Which score range has the highest frequency? [1]

(c) How many employees took the test? [1]

(d) To the nearest percent, what percent scored 1400 or more? [1]

6.B Ahmed tracks when people arrive for a 7:30 p.m. show.

Arrival time	5:30–5:59	6:00–6:29	6:30–6:59	7:00–7:29	7:30–8:00
Percent of patrons	2%	14%	25%	48%	11%

(a) In a histogram of this data, which bar is the tallest? [1]

(b) What percent of the patrons arrive before 7:00 p.m.? [1]

A	B	C	D
16%	25%	41%	59%

Lesson 7 · Probability

7.A Give each probability as a fraction, a decimal and a percent. Do not use a calculator.

Situation	Fraction	Decimal	Percent
20 of 50 word tiles are vowels. P(drawing a vowel)			
A bag has 4 red, 4 blue and 2 green marbles. P(green)			
180 adult and 60 child tickets are sold. One wins a prize. P(a child wins)			
A spinner has six equal sections numbered 1 to 6. P(5 or 6)			

7.B Give each answer as a fraction.

Situation	Probability
Kim rolls two six-sided dice. P(both are 4s)	
Ten cards numbered 1 to 10. Toni draws one, replaces it, draws again. P(both greater than 5)	
A spinner has 4 equal sections: 2 red, 1 green, 1 blue. Spun 3 times. P(all three red)	
A bag has 10 red and 10 black marbles. Two are drawn without replacing. P(both red)	
Allison tosses a coin four times. P(heads all four times)	
You roll two dice. P(both odd)	

7.C There are 15 chips in a bag: 8 green and 7 white. Five white chips are removed. What is the probability that the next chip picked is green?

A	B	C	D
100%	80%	75%	25%

7.D Erin flips a coin 40 times and gets 24 tails and 16 heads. Based on her data, what is the experimental probability of tails?

A	B	C	D
3 out of 5	3 out of 4	2 out of 3	2 out of 5

Lesson 8 · Combinations

8.A Use counting, an organized list or a table.

Problem	Combinations
Rob picks a team of 4 from 5 employees. How many teams?	
Jessica takes 3 of her 5 books on holiday. How many choices of 3?	
Grant picks 3 of 4 pizza toppings. How many ways?	
Five friends; a game is for 2 players. How many pairs?	

8.B Use a tree diagram or the fundamental counting principle.

Problem	Combinations
Frank's sandwich: one of 4 breads, one of 3 meats, one of 4 sauces	
Henry's gift: one of 3 papers, one of 3 ribbons, one of 3 bows	
Julio's weekend: one of 2 Friday plans, one of 3 museums, one of 4 restaurants	

8.C Regan will take two of her four employees to a trade show. How many pairs could she choose?

A	B	C	D
4	6	10	24

8.D A passphrase is a Greek letter, then a number from 1 to 9, then a Greek letter. There are 24 Greek letters. How many passphrases are possible?

A	B	C	D
24	57	576	5184

8.E A chef makes a soup with one of 4 meats, one of 4 vegetables, one of 4 noodles, one of 4 broths and one of 4 spices. How many soups are possible?

A	B	C	D
20	256	1024	3125

Lesson 9 · Permutations

9.A Decide whether each problem is a combination or a permutation. Then solve.

Problem	Combination or permutation?	Answer
Noemi's password uses M, Q, $, L and 7 in some order. How many orders?		
Bilal visits 4 exhibits in some order. How many orders?		
3 of 5 volunteers are chosen to help. How many groups?		
Tyrell hangs 6 paintings in a row. How many orders?		

9.B Soraya has six tasks but time for only four, and she must choose the order. How many orderings of four tasks are there?

A	B	C	D
24	36	360	720

9.C Ten people try out for four movie roles: Bystander #1, #2, #3 and #4. How many ways can the roles be filled?

A	B	C	D
24	40	540	5040

9.D Clark's daughter can ride three of the six rides at a fair.

(a) How many groups of three rides could she choose? [1]

A	B	C	D
18	20	120	720

(b) She also picks the order she rides them in. How many orderings of three rides are there? [1]

A	B	C	D
18	20	120	720

Lesson 10 · Comparing proportions

10.A Class A says 9 of its 24 students walk to school. Class B's bar graph shows 12 walkers out of 30 students. Class C says "45% of us walk." Which class has the greatest share of walkers? Show the share for each class as a percent. [2]

10.B A candidate predicted she would win 55% of the vote. A bar graph of the results shows: her 140 votes, Candidate B 90 votes, Candidate C 20 votes. Was her prediction too high or too low, and by how many percentage points? [2]

10.C A line graph shows Car P going from 0 to 60 mph in 6 seconds. Car Q's spec sheet says 0 to 60 mph in 7.5 seconds. Car R accelerates at 9 mph per second. Rank the cars from fastest to slowest acceleration.

A	B	C	D
P, R, Q	R, P, Q	P, Q, R	Q, R, P

Chapter practice questions

P1 Jim and his three friends each bought three raffle tickets. 400 tickets were sold in all. What is the probability that Jim or one of his friends wins?

A	B	C	D
1/400	1/100	3/100	3/25

P2 The table shows the weather in six areas on March 9.

Area	High	Low	Rain (in)
Downtown	65°F	53°F	0.45
Airport	56°F	48°F	0.63
Woodland Hills	62°F	50°F	1.34
East Village	62°F	49°F	3.53
Ventura	68°F	50°F	2.57
Highland Park	64°F	55°F	0.84

(a) What was the median low temperature? [1]

A	B	C	D
62.8°	51.5°	50.8°	50°

(b) What was the mean rainfall, in inches? [1]

A	B	C	D
0.65	1.09	1.56	1.99

(c) Which area had the greatest range between its high and low temperatures? [1]

A	B	C	D
Ventura	East Village	Woodland Hills	Downtown

P3 A standard deck has 52 cards, 13 each of hearts, diamonds, clubs and spades. What is the probability that a card drawn at random is a heart or a diamond?

A	B	C	D
1 in 2	1 in 4	1 in 8	1 in 16

P4 A spinner has five equal sections numbered 1 to 5. What is the probability of spinning a number greater than 3? Give a fraction. [1]

P5 A basketball player's results over eight games:

Game	1	2	3	4	5	6	7	8
Shots attempted	25	23	26	24	29	18	24	27
Shots made	10	12	10	13	15	7	12	10

(a) What was the median number of shots attempted? [1]

A	B	C	D
24	24.5	25	26.5

(b) What is the mode of the shots made? [1]

A	B	C	D
12	11	10 and 12	10

P6 A bag has 24 marbles: 8 red, 6 blue and 10 white. One is drawn and replaced, then a second is drawn. What is the probability that the first is red and the second is white?

A	B	C	D
5/36	3/4	1/12	5/12

P7 Andy rolls two six-sided dice. What is the probability of rolling two 1s? Give a fraction. [1]

P8 Kate drove 158, 276, 54, 305 and 210 miles on five days. What was the median distance, in miles? [1]

P9 Angelique's reading list will have one historical novel, one science-fiction book, one poetry book and one graphic novel. She has five of each to choose from. How many reading lists are possible? [1]

P10 Three of the four children in a class will be hall monitors. How many groups of hall monitors are possible? [1]

P11 A board of ten members elects a president, then a treasurer, then a secretary. No one can hold two posts. How many ways can the posts be filled? [1]

Check yourself

1 Make up a data set of five numbers whose mean is 10 but whose median is not 10. Show that your set works. [2]

2 Explain when the median is a better "average" to use than the mean. Give an example with numbers. [2]

3 A bar graph and a line graph can show the same data. Describe a set of data that is better shown as a line graph, and say why. [2]

4 A bag has 6 red and 4 yellow counters. Find P(two reds) if you put the first counter back, and if you don't. Which is bigger, and why? [3]

5 Write one combination problem and one permutation problem about choosing 2 of 5 friends. Solve both and explain why the answers differ. [3]

Chapter quiz

Q1 In a pictograph, each book symbol stands for 20 books. How many books do 4½ symbols show?

A	B	C	D
45	80	90	100

Q2 Which kind of graph is best for showing how one amount changes over time?

A	B	C	D
Circle graph	Line graph	Pictograph	Frequency table

Q3 A circle graph shows a $2,400 budget. Rent is 30%. How much is spent on rent?

A	B	C	D
$300	$720	$800	$1,680

Q4 What is the mean of 12, 15, 9, 20 and 14?

A	B	C	D
14	15	13	70

Q5 What is the median of 8, 3, 11, 6, 5 and 9?

A	B	C	D
6	6.5	7	7.5

Q6 What is the mode of 4, 7, 4, 9, 7, 4, 2?

A	B	C	D
7	9	5.3	4

Q7 The highest score in a set is 94 and the lowest is 58. What is the range?

A	B	C	D
36	76	152	58

Q8 On a line plot, most dots sit over 2–5 and one dot sits over 14. What is the dot over 14?

A	B	C	D
The mode	The median	An outlier	The range

Q9 A bag holds 3 red, 5 blue and 2 green marbles. What is the probability of picking a blue one?

A	B	C	D
1/5	1/2	1/3	5/3

Q10 You flip a coin and roll a six-sided die. What is P(heads and a 6)?

A	B	C	D
1/12	1/8	2/3	1/6

Q11 A café offers 4 sandwiches, 3 drinks and 2 desserts. How many meals of one of each are there?

A	B	C	D
9	12	24	36

Q12 Eight runners race. How many ways can 1st, 2nd and 3rd place be filled?

A	B	C	D
24	56	512	336

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/ged-mathematics/chapter-4-data-statistics-and-probability/