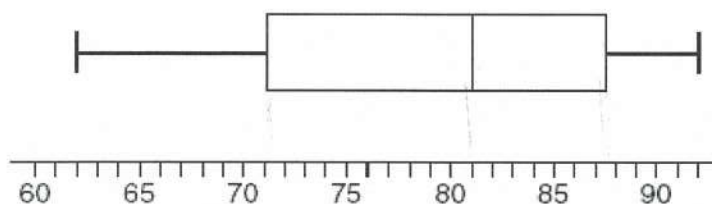


Quartiles, Box and Whisker, and Percentile Mixed Practice

Name: Answers

1) The accompanying diagram shows a box-and-whisker plot of student test scores on last year's mathematics midterm examination.



(hard to see ↓
or 88?)

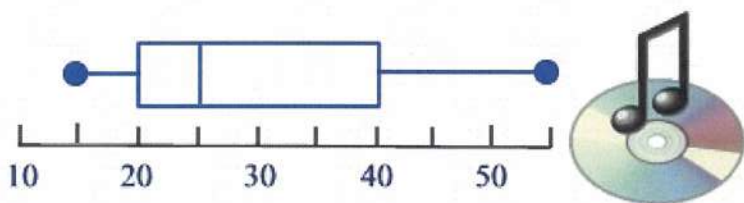
a) Find all 5 statistical data summary values:

minimum = 62, $Q_1 = 71$, Median = 81, $Q_3 = 87$
maximum = 92

b) If someone scored an 81 on this test, what is their percentile rank?

50th percentile (since 81 is median)

2) The number of iTunes downloaded by 25 students in one week ranges from 15 to 55. The box-and-whisker plot below depicts this data. For this data



a) What is the minimum number of iTunes downloaded?

b) What is the maximum number of iTunes downloaded?

c) What is the number of iTunes at the 25th percentile?

d) What is the number of iTunes at the 50th percentile?

e) What is the number of iTunes at the 75th percentile?

15
55
 $Q_1 = 20$
Median = 25
 $Q_3 = 40$

3) The frequency table shows the distribution of weight, in pounds, of 32 students. Which interval contains the lower quartile? Which interval contains the upper quartile?

Written
tricky: big to small

Imagine 32 pieces of data → find which piece would be the middle (median) & then the middle of each half, left over

16 17 — 32

Q1 would be 8.5th term

median would be 16.5th term

Q3 would be 25.5th term

Interval	Frequency
160-179	9 Q_3
140-159	8 Med
120-139	6
100-119	2 Q_1
80-99	7

total 32

4) The Final Exam test scores were:

62, 66, 71, 75, 75, 78, 81, 83, 84, 85, 85, 87, 89, 89, 91, 92, 93, 94, 95, 99.

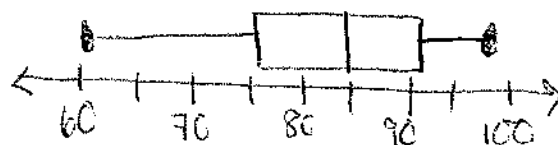
a) Find the percentile rank for a score of 85 on this test.

$$\frac{\# \leq 85}{\text{total } \#} = \frac{11}{20} \times 100 = 55\%$$

55th percentile

b) Create a box and whisker plot for this data. Don't forget to put a number line under the graph!

Put in L: min = 62 med = 85
Q1 = 76.5 Q3 = 91.5



5) The heights of students in inches in math class are

55, 59, 59, 60, 61, 63, 64, 64, 65, 68, 68, 69, 72, 74.

Find the percentile rank for a height of 61 inches.

Count # of hts equal to or less than 61 → $\frac{5}{14} \times 100 = 35.71\%$
total #

36%

6) The table shows the frequency of test scores.

find median — Count in from both sides ✓ or total = $60 \div 2 = 30$

The 50th percentile lies in which interval?

30th term

Interval	Frequency of test scores
1-10	7
11-20	11
21-30	14
31-40	6
41-50	22

21-30

7) Create a stem and leaf plot for the data: 25, 26, 26, 28, 30, 41, 45, 55, 55, 55

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2 | 5 6 6 8
3 | 0
4 | 1 5
5 | 5 5 5
    
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Key: 2/5 = 25

8) If a watch was originally \$120 but sold for \$90, what was the percent of the decrease in cost?

$\frac{\text{change}}{\text{orig. amt}} \times 100\% = \%$
 $\frac{120 - 90}{120} \times 100 = 25\%$

$\frac{30}{120} \times 100 = 25\%$ decrease

9) Simplify each expression below:

a) $6\sqrt{10} \cdot 3\sqrt{5}$

$18\sqrt{50}$
 $18\sqrt{25 \cdot 2}$
 $18 \cdot 5\sqrt{2} = 90\sqrt{2}$

b) $(x^2 + 7x - 7) + (4x^2 - 10x - 1)$
 $5x^2 - 3x - 8$

c) $\frac{(3 \times 10^2)(6 \times 10^{-7})}{2 \times 10^{-3}}$

$\frac{18 \times 10^{-5}}{2 \times 10^{-3}} = 9 \times 10^{-2}$