

Analysis of Results of 2017 SVSU Math Olympics

March 17, 2017

1 Participation

This year there were 344 students with 207 competing in the level I competition and 137 in the level II. A total of 12 schools participated this year with 11 schools participating at level I and 9 schools at level II.

Table 1 shows the number of participants at each grade level. This year, the numbers should actually add up to the number of participants, since all students correctly filled in their grade level.

| | 7 | 8 | 9 | 10 | 11 | 12 |
|---------|----|----|----|----|----|----|
| Level 1 | 16 | 23 | 59 | 71 | 26 | 12 |
| Level 2 | | | 3 | 21 | 60 | 53 |

Table 1: Number of participants at each grade level

2 Scores

With a maximum possible score of 25, the average score on the level I exam was 8.59 and the average on the level II exam was 6.97 (as always, tough exams!). The standard deviations for levels I and II were 3.97 and 3.56, respectively. Table 2 shows the maximal scores for each grade level. The score distributions in both levels are shown in Figures 1 and 2.

| | 7 | 8 | 9 | 10 | 11 | 12 |
|---------|----|----|----|----|----|----|
| Level 1 | 11 | 21 | 21 | 19 | 14 | 15 |
| Level 2 | | | 18 | 20 | 21 | 18 |

Table 2: Maximal scores obtained at each grade level

3 Breakdown by Question

Table 3 shows the percent of correct answers per question.

Figures 3 and 4 display the same information graphically.

Figures 5 and 6 display more detailed information. For each question, the bars show how many time did the specific answer occur. The correct answer is indicated by the red bar.

Sometimes, especially on the harder questions, number of students guessed the answers randomly. To aid judging the difficulty of such questions, Figures 7 and 8 display similar information as Figures 5 and 6, this time restricted to students with scores in top 20%.

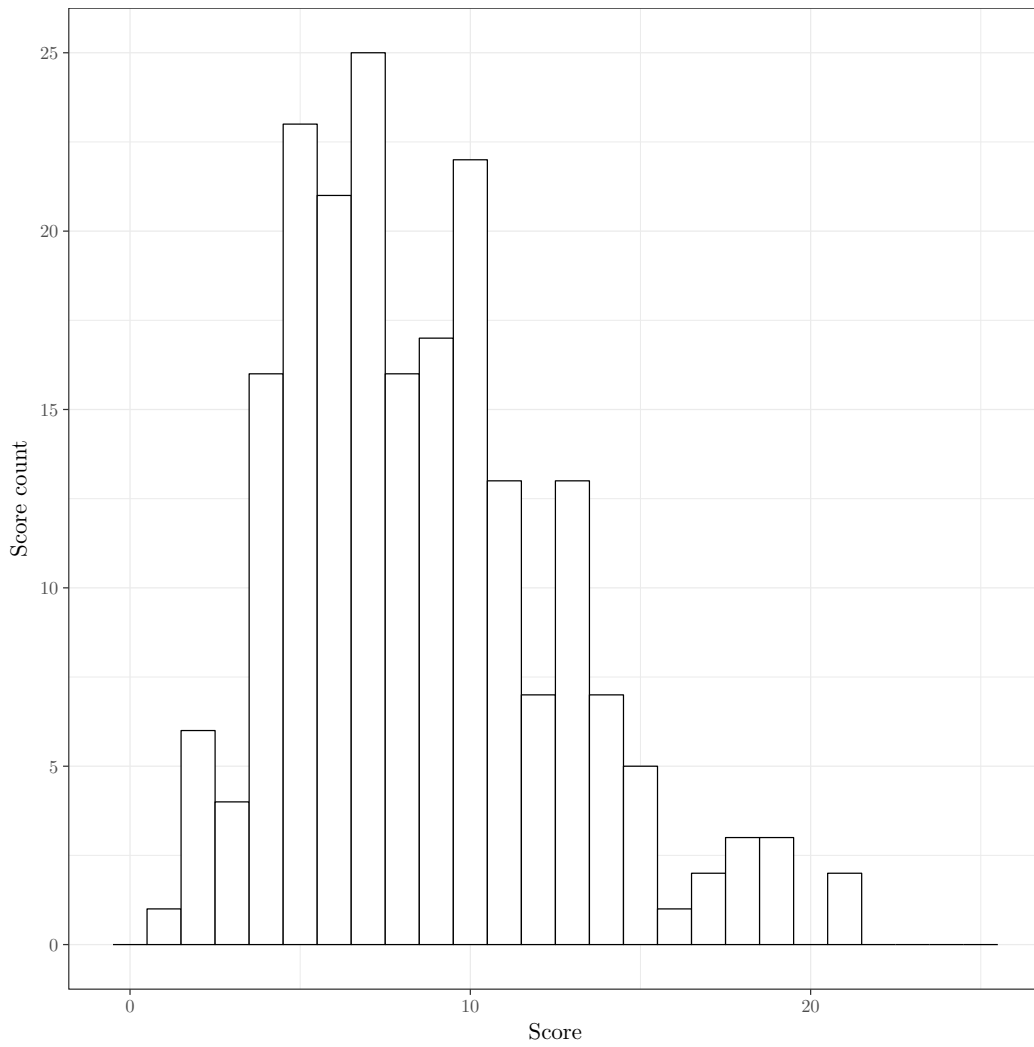


Figure 1: Score distribution for Level I

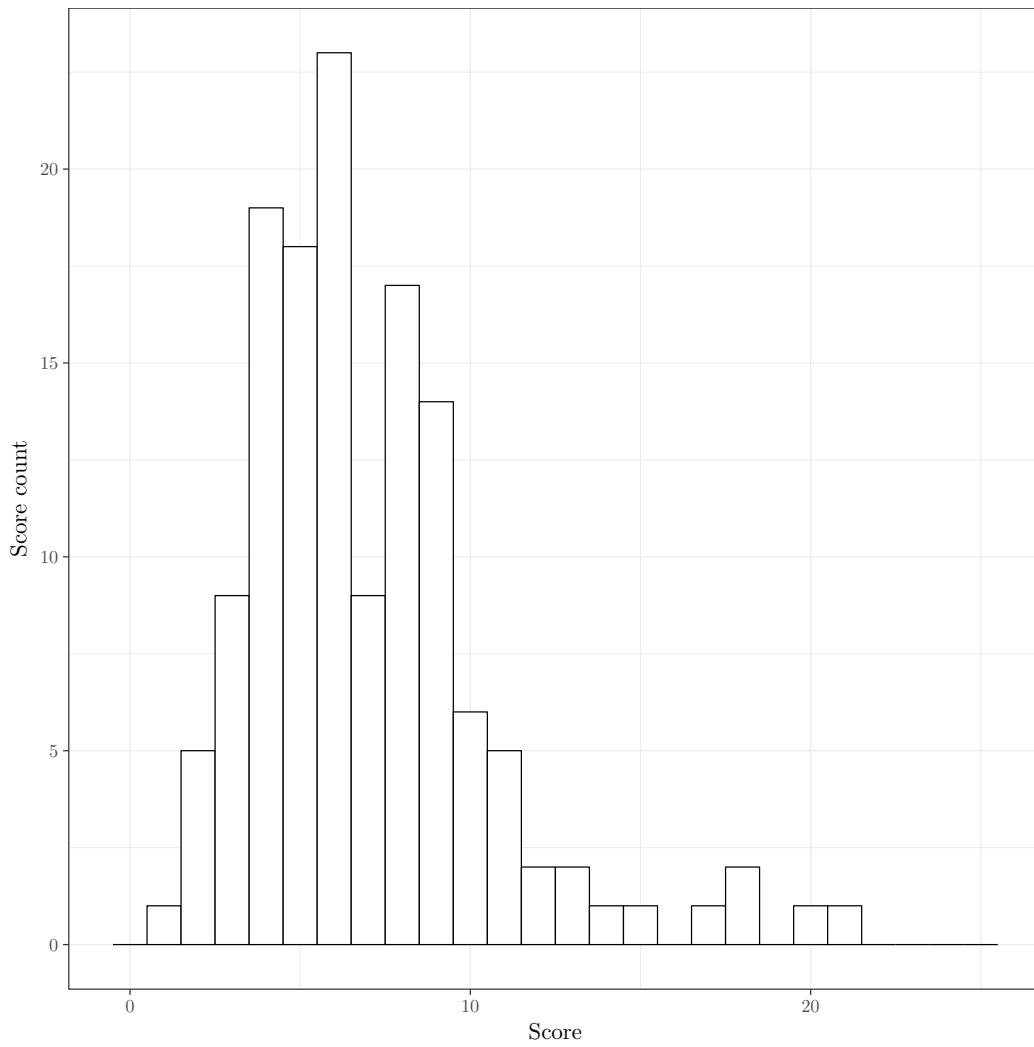


Figure 2: Score distribution for Level II

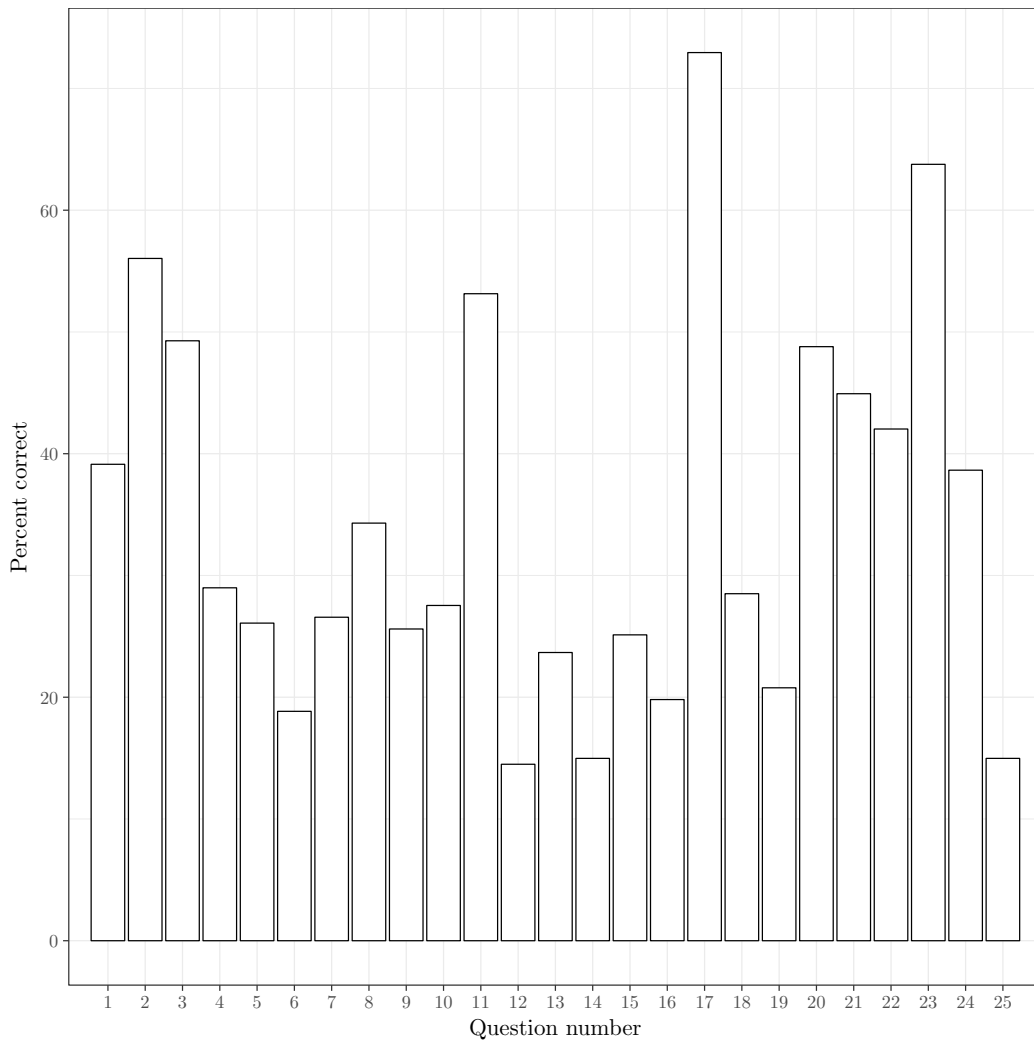


Figure 3: Percent of correct answers per question on Level I.

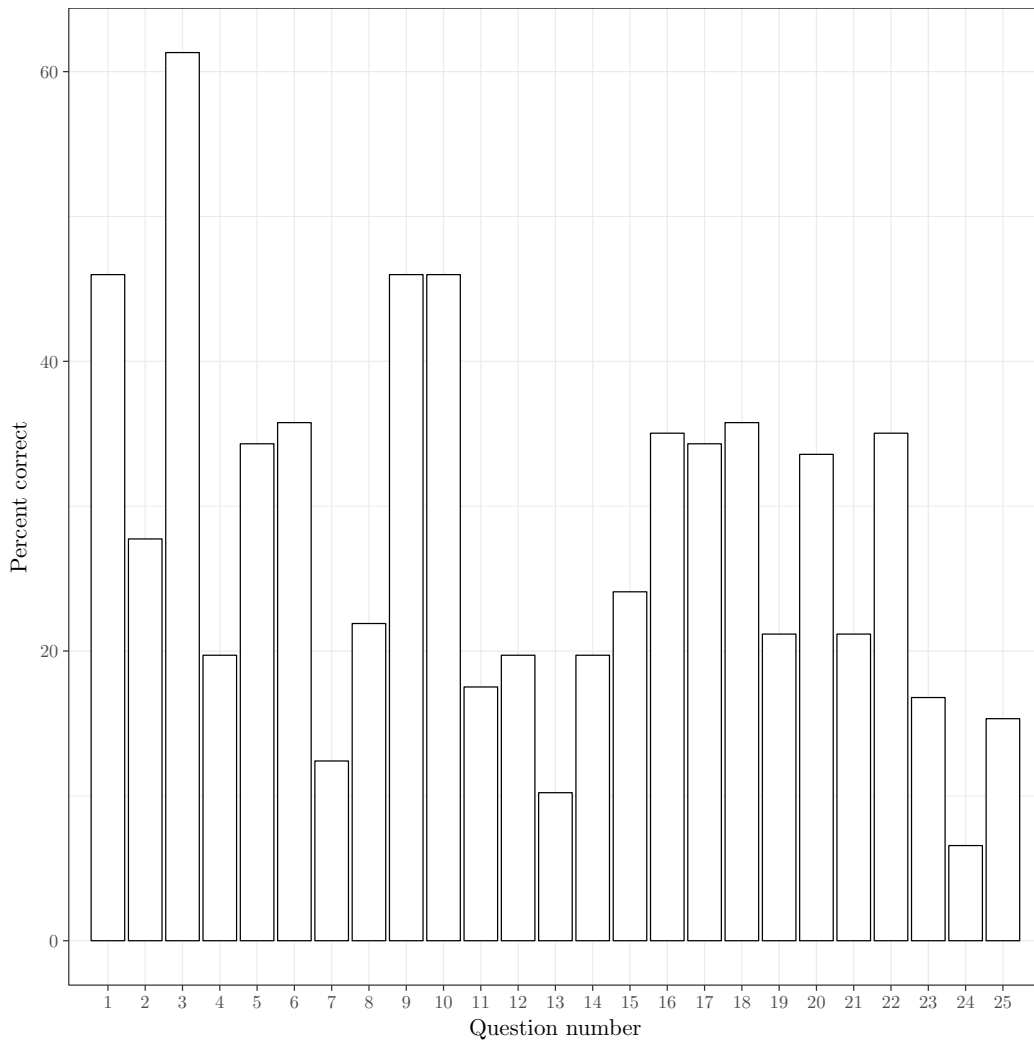


Figure 4: Percent of correct answers per question on Level II.

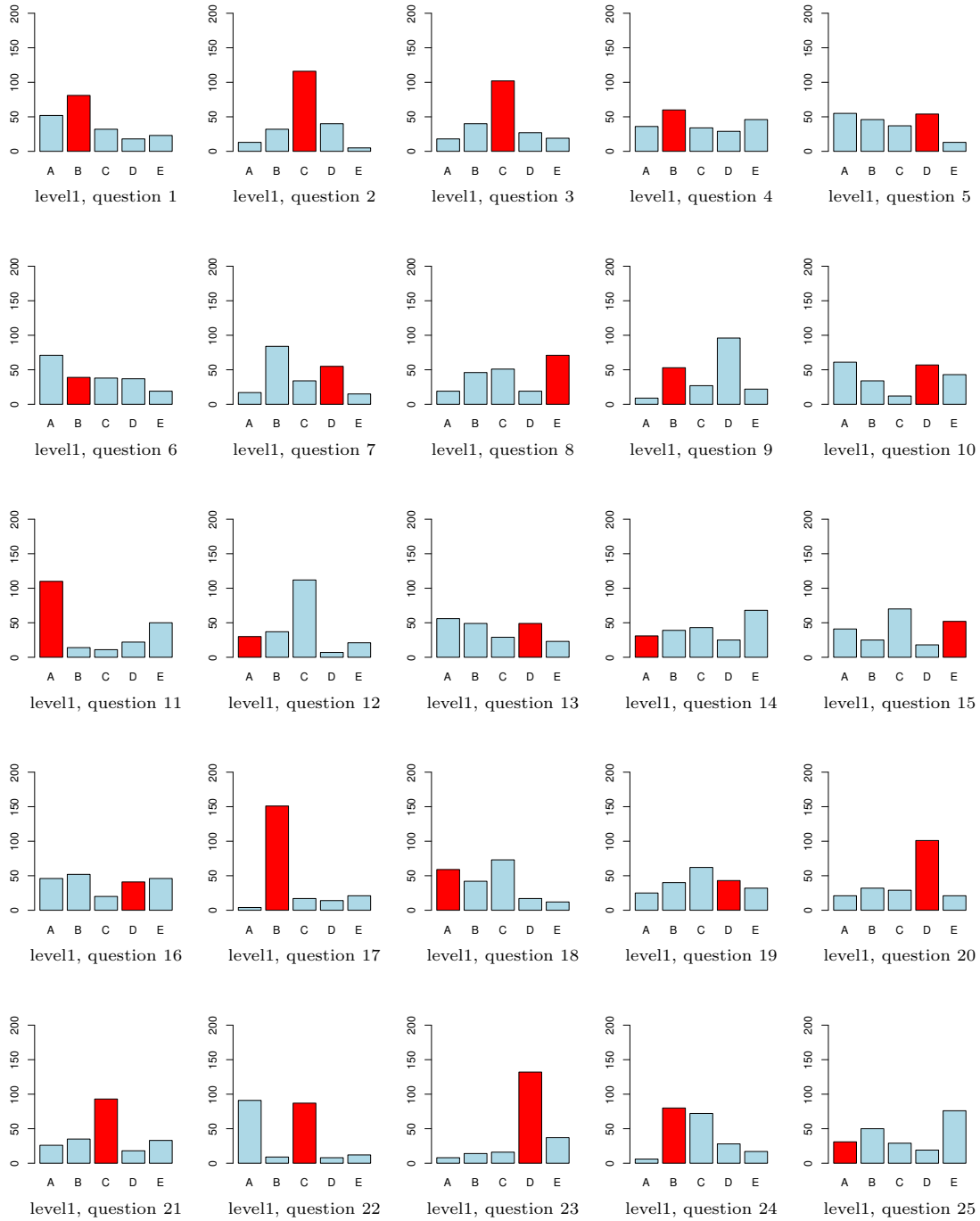


Figure 5: Summary of all answers per question on Level I.

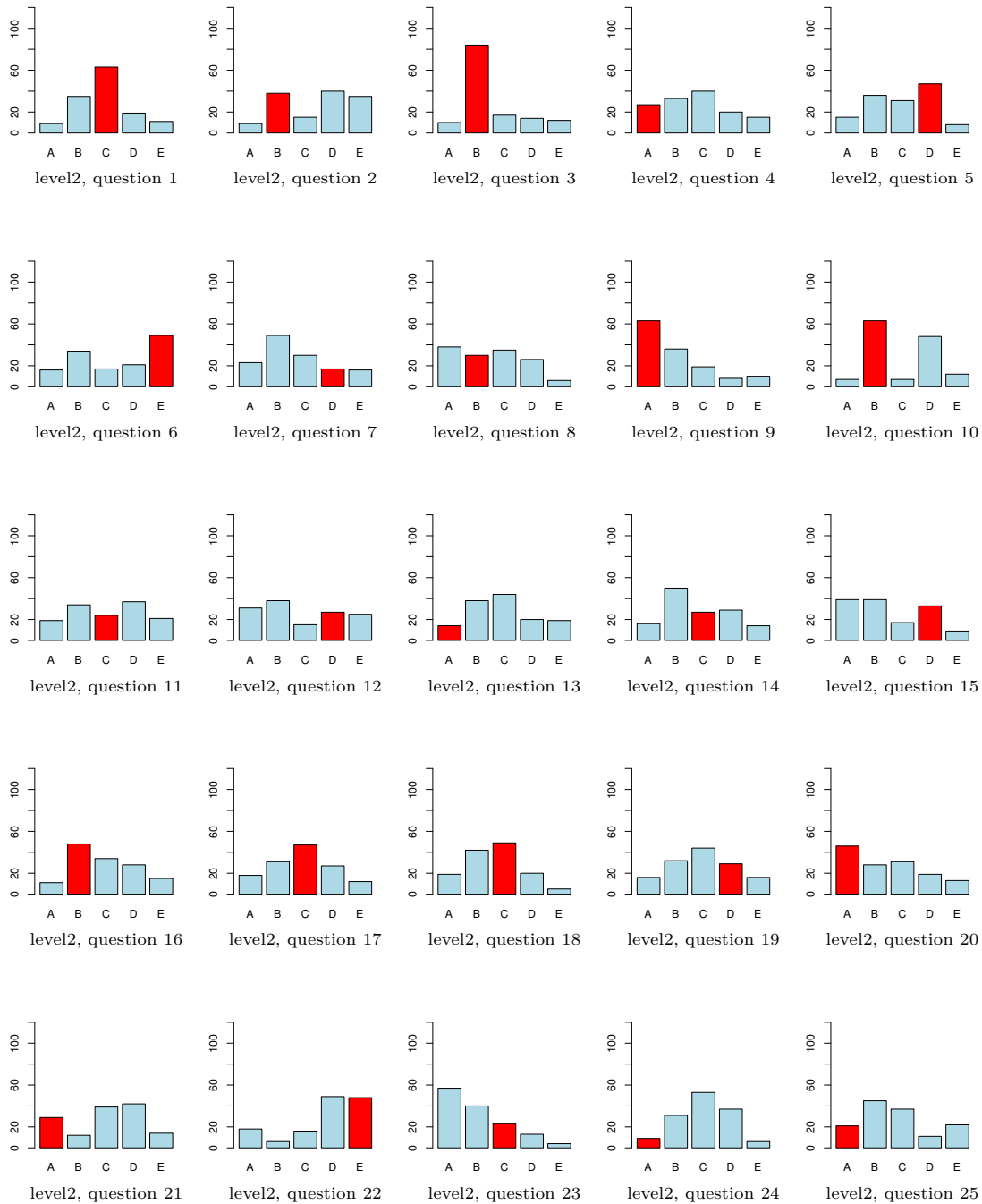


Figure 6: Summary of all answers per question on Level II.

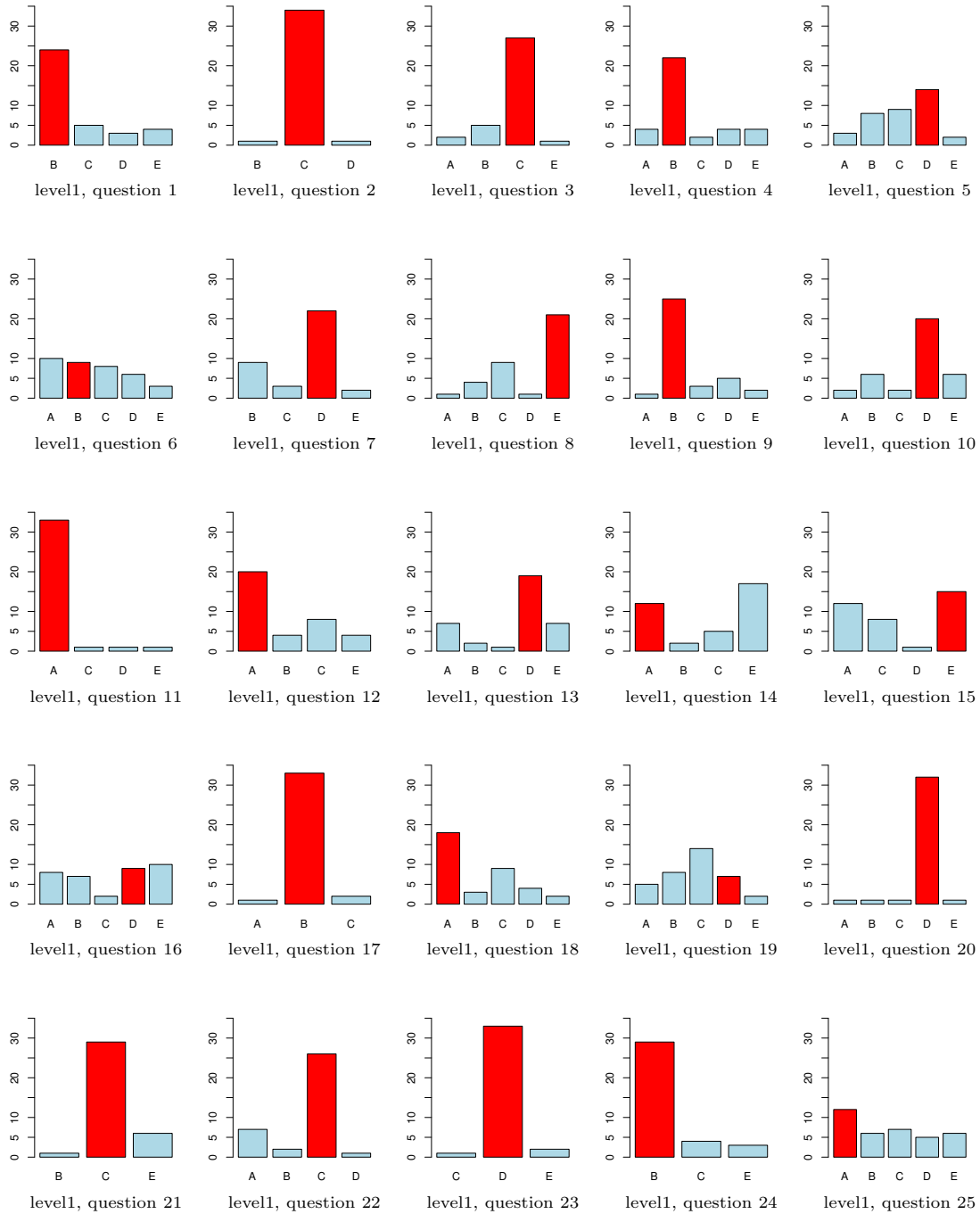


Figure 7: Summary of answers per question given by participants with at least 13 correctly answered questions on Level I.

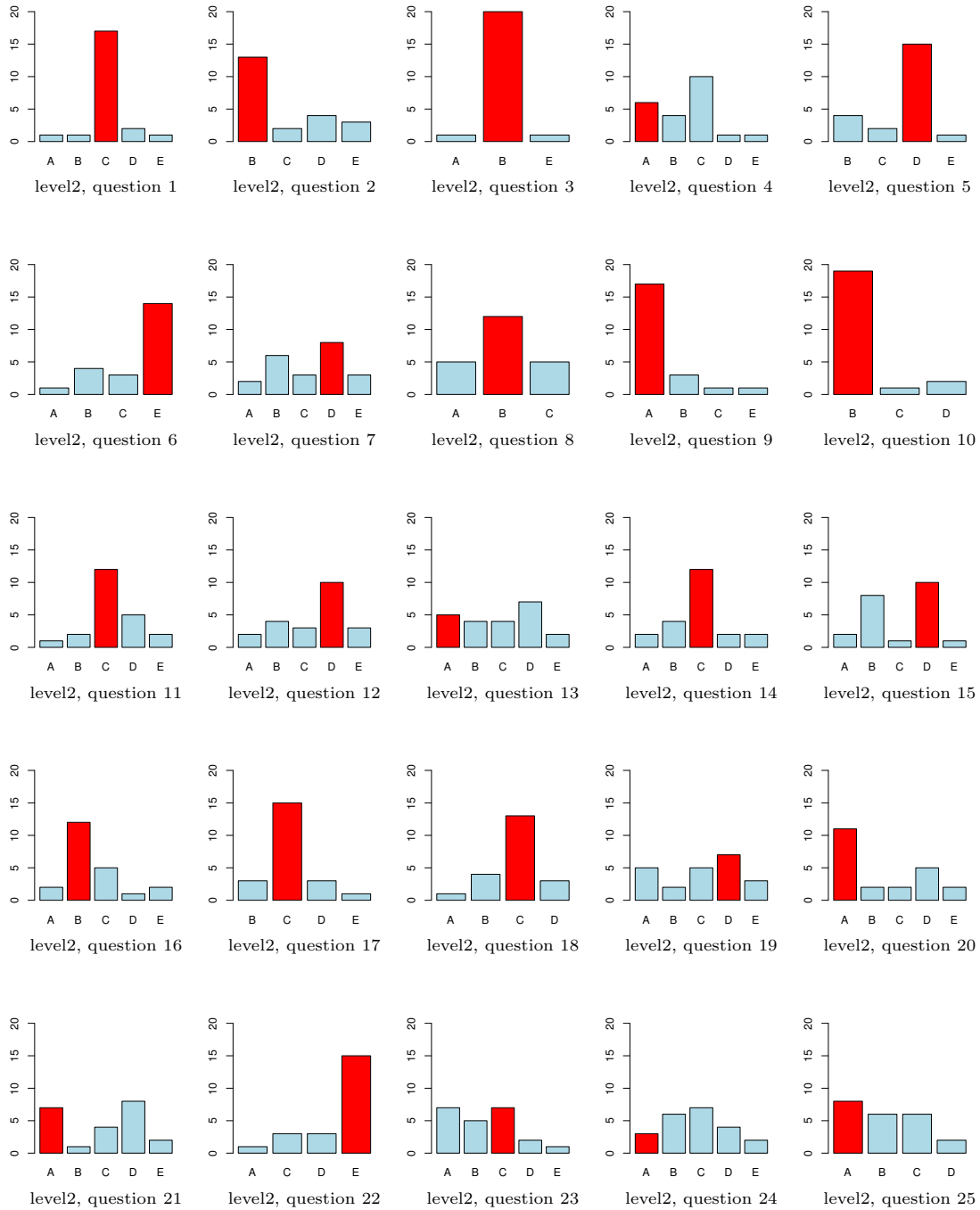


Figure 8: Summary of answers per question given by participants with at least 10 correctly answered questions on Level II.

| | Level 1 | Level 2 |
|----|---------|---------|
| 1 | 39.13 | 45.99 |
| 2 | 56.04 | 27.74 |
| 3 | 49.28 | 61.31 |
| 4 | 28.99 | 19.71 |
| 5 | 26.09 | 34.31 |
| 6 | 18.84 | 35.77 |
| 7 | 26.57 | 12.41 |
| 8 | 34.30 | 21.90 |
| 9 | 25.60 | 45.99 |
| 10 | 27.54 | 45.99 |
| 11 | 53.14 | 17.52 |
| 12 | 14.49 | 19.71 |
| 13 | 23.67 | 10.22 |
| 14 | 14.98 | 19.71 |
| 15 | 25.12 | 24.09 |
| 16 | 19.81 | 35.04 |
| 17 | 72.95 | 34.31 |
| 18 | 28.50 | 35.77 |
| 19 | 20.77 | 21.17 |
| 20 | 48.79 | 33.58 |
| 21 | 44.93 | 21.17 |
| 22 | 42.03 | 35.04 |
| 23 | 63.77 | 16.79 |
| 24 | 38.65 | 6.57 |
| 25 | 14.98 | 15.33 |

Table 3: Percent of correct answers per question