

Data, Graphs and Line Plots: practice solutions, Grade 2 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Recess tally



- The jump rope row has 2 full groups of five and 3 single lines: $5 + 5 + 3 = 13$. **13 students chose jump rope.**
- The rows are tag 8, jump rope 13, hopscotch 6, kickball 10. The smallest number is 6, so **hopscotch** got the fewest votes.
- Subtract: $10 - 6 = 4$. **4 more students chose kickball.**

2 Groups of five



- 7: one group of five and 2 single lines, because $5 + 2 = 7$.
- 10: two groups of five and 0 single lines, because $5 + 5 = 10$.
- 13: two groups of five and 3 single lines, because $10 + 3 = 13$.

The number **10** needs no single lines.

3 Orchard picture graph



- a. The key says each star is 1 fruit. The plums row has 7 stars, so **7 plums**.
- b. Cherries have only 3 stars, the shortest row, so **cherries** were picked the least.
- c. Add all the rows: $6 + 4 + 7 + 3 = 20$. **20 pieces of fruit** were picked.

4 Pets at home



- a. The cat bar reaches the line marked 7. **7 students have cats**.
- b. The shortest bar is the fish bar at 3, so **fish** are owned by the fewest students.
- c. Cats 7 and dogs 5: $7 - 5 = 2$. **2 more students have cats**.

5 Leaf line plot



- a. There are 3 X marks above the 3, so **3 leaves**.
- b. The last X is above 6, so the longest leaf is **6 inches**.
- c. The first X is above 2, so the shortest leaf is **2 inches**.
- d. Count the X marks: $1 + 3 + 2 + 1 + 2 = 9$. **Zoe measured 9 leaves**.

6 True or false?



- a. **True**. The slash is drawn across four lines, and the whole group is worth 5.
- b. **False**. The key tells how many things one symbol stands for, so we need it to read the graph.
- c. **False**. A taller bar means a greater number.
- d. **True**. Each X marks one piece of data, such as one length.

7 Make a tally chart



Count each letter. R appears 5 times, B appears 3 times, and G appears 2 times.

Red	
Blue	
Green	

Check: $5 + 3 + 2 = 10$, which is the number of friends. Red has one full group of five.

8 Sticker picture graph



- Ben's row has 6 stars. Each star is 2, so count by twos: 2, 4, 6, 8, 10, 12. **Ben has 12 stickers.**
- Cy has 3 stars, which is 6 stickers. $12 - 6 = 6$. **Ben has 6 more stickers.**
- Ana 8, Ben 12, Cy 6, Dee 10: $8 + 12 + 6 + 10 = 36$. **They have 36 stickers in all.**

9 Books read by four rooms



- Room A read 14 books and Room D read 8: $14 - 8 = 6$. **Room A read 6 more books.**
- $14 + 10 + 18 + 8 = 50$. **The rooms read 50 books in all.**
- Room C read 18. Try pairs: $10 + 8 = 18$. **Room B and Room D together read as many as Room C.**

10 Long jump line plot



- a. The tallest stack is above 5, with 4 X marks. **5 feet** happened the most.
- b. More than 5 feet means 6 feet or 7 feet. There is 1 X above 6 and 2 above 7:
 $1 + 2 = 3$. **3 students** jumped more than 5 feet.
- c. Longest 7 feet, shortest 3 feet: $7 - 3 = 4$. **The difference is 4 feet.**

11 Lunch vote



- a. Pizza 9, tacos 14, pasta 6, salad 5. $9 + 14 + 6 + 5 = 34$. **34 students voted.**
- b. $14 - 9 = 5$. **5 more students chose tacos.**
- c. Pizza and pasta: $9 + 6 = 15$. Tacos got 14. Since $15 > 14$, **yes**, pizza and pasta together got 1 more vote than tacos.

12 Birthday seasons

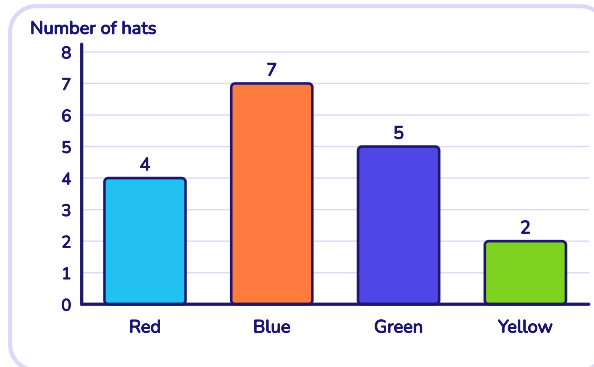


- a. The tallest bar is summer, at 9. **Summer** has the most birthdays.
- b. $9 - 4 = 5$. **5 more birthdays** are in summer.
- c. Each student has one birthday, so add all the bars: $6 + 9 + 4 + 7 = 26$. **There are 26 students.**
- d. Take away the summer birthdays: $26 - 9 = 17$. Or add the others: $6 + 4 + 7 = 17$. **17 birthdays** are not in summer.

13 Draw a bar graph



The biggest number is 7, so a scale from 0 to 8 that counts by ones fits well. A scale that counts by tens would make every bar tiny. The bars are 4, 7, 5, and 2 units tall.

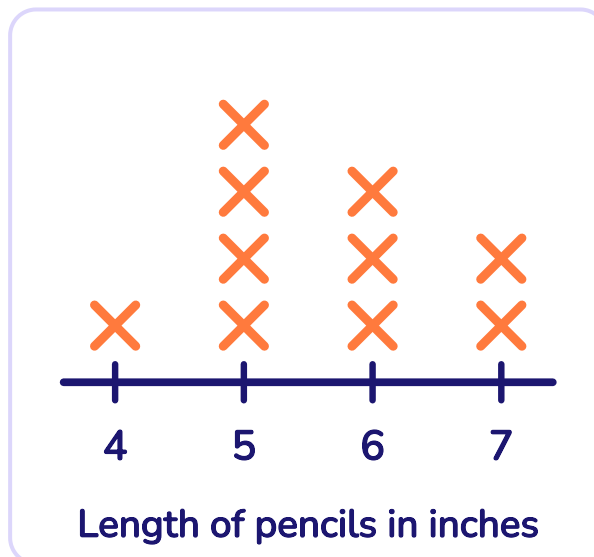


The blue bar is the tallest and the yellow bar is the shortest. Check: $4 + 7 + 5 + 2 = 18$ hats.

14 Make a line plot



Draw a number line from 4 to 7 and make one X for every pencil. There is 1 pencil of 4 inches, 4 of 5 inches, 3 of 6 inches, and 2 of 7 inches.



Check: $1 + 4 + 3 + 2 = 10$ X marks, one for each pencil. **4 pencils** are 5 inches long.

15 Shell collecting



Read the bars: Pam 15, Raj 10, Liv 20, Tom 5. Liv gives away 5: $20 - 5 = 15$. Tom receives 5: $5 + 5 = 10$.

Now Pam has 15, Raj has 10, Liv has 15, and Tom has 10. **Pam and Liv tie for the most, with 15 shells each.** The total stays the same: $15 + 10 + 15 + 10 = 50$, just like $15 + 10 + 20 + 5 = 50$.

16 Find the mistake: picture graph



Max is **not right**. He forgot to use the key. Each circle stands for 2 books, not 1.

Skip count by twos six times: 2, 4, 6, 8, 10, 12. Or multiply: $6 \times 2 = 12$. **Room 3 read 12 books.**

17 Find the mistake: tally marks



Jo counted each group as 1 instead of 5. Each group of five is worth 5.

Count by fives: 5, 10, 15. Then add the 2 lines: 16, 17. $15 + 2 = 17$. **The correct total is 17.**

18 Four-category survey



- The numbers must add up to 20. Known: $7 + 5 + 6 = 18$. Then $20 - 18 = 2$. **2 students chose skating.**
- The smallest number is 2, so **skating** is the least popular.
- $7 - 2 = 5$. **5 more students chose soccer.**
- $5 + 6 = 11$. **11 students** chose swimming or biking.

19 Plant heights



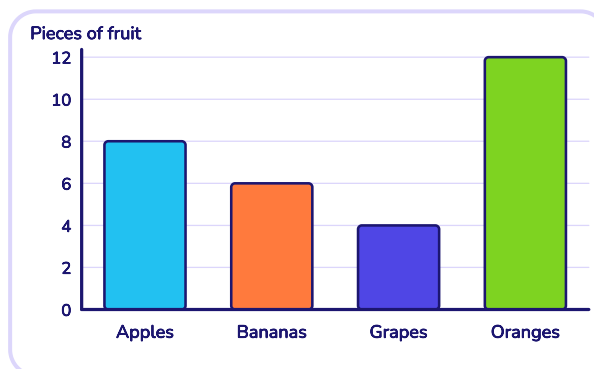
- a. There are 4 X marks above the 8. **4 plants.**
- b. Taller than 7 means 8, 9, or 10 inches: $4 + 1 + 1 = 6$. **6 plants.**
- c. Shorter than 7 means 5 or 6 inches: $1 + 2 = 3$. **3 plants.**
- d. $10 - 5 = 5$. **The difference is 5 inches.**

Check: $3 + 3 + 6 = 12$, because 3 plants are exactly 7 inches tall.

20 Choose a scale



Read the tally: apples 8, bananas 6, grapes 4, oranges 12. Every number is even and the largest is 12, so a scale that **counts by 2s** from 0 to 12 is best. Counting by 10s would hide the differences.



The bars are 8, 6, 4, and 12 tall. Total: $8 + 6 + 4 + 12 = 30$. **30 pieces of fruit** were eaten.

21 Two days of cookies



- a. Friday: $12 + 8 + 14 + 6 = 40$. Saturday: $10 + 9 + 20 + 6 = 45$. **40 cookies on Friday and 45 on Saturday.**
- b. Lemon: $9 - 8 = 1$ more. Chocolate: $20 - 14 = 6$ more. Oatmeal sold fewer (10 is less than 12). **Lemon sold 1 more and chocolate sold 6 more.**
- c. Ginger sold 6 on both days, so **ginger** stayed the same.

Check: $45 - 40 = 5$ more cookies on Saturday, and $1 + 6 - 2 = 5$.



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