CKACS Student Assessment
Grades 3-5 Version

Content Knowledge Items

Part 1 Task: Your teacher has asked you to teach a lesson about computers to the second grade students at your school. In this lesson, you need to teach about the parts of a computer, how they work, and why computers are important.

1. The items on this page are computing system input and output items. Drag the items to the input or output box based on their role in a computing system. You will use the finished picture in your lesson.

2. Now you will make a second picture for your lesson that shows how a computing system works. Drag and drop 1 item to put in each of the boxes on the diagram to make a picture of a computing system.

3. Describe each of the four items in your computer system diagram and how each one is used in the computing system.

4. Explain how each item works with the other items to make your computer system work.

It is important that the second graders you are teaching not only understand *how* a computer system works, but also *why* computer technologies are important.

5. Which of the technologies listed below are **computing technologies** that you could teach the second graders about? (Select all that apply.)
    Internet search engine
    Light up sneakers
    Fidget spinner
    Smartphone application (software)/App

6. What statements below can you use to explain to the second graders how computing technologies affect how people **communicate** with one another. (Select all that apply.)
   People can learn new things by watching YouTube
   People write letters by hand
   People can talk on video apps
   People can add things to an online shopping cart
   People can learn new things by watching a Zoom lesson

Part 2 Task: For the school science fair, you have been asked to design an experiment, collect, and analyze data. For your project, you decide to grow strawberries and see how many are produced each day for a week.

7. Drag the steps into the order that you would take to conduct your investigation.
   Plant the plants
   Make dessert with the strawberries
   Put soil in the pots
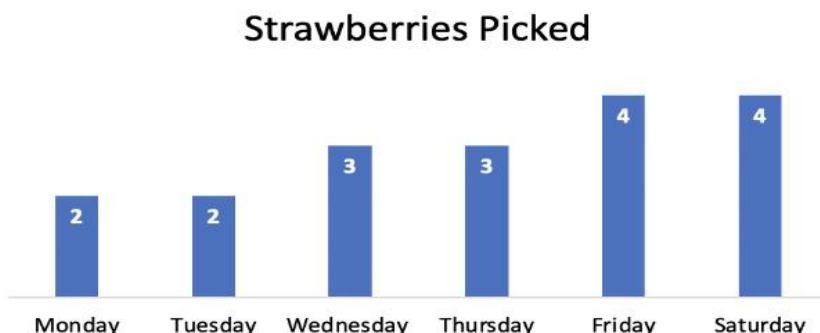   Pick and count the strawberries
   Water the plants

Once the plants have grown and strawberries appear, you pick them every day for six days. The following picture shows the number of strawberries that you picked each day.

🍓 🍓   Monday
🍓 🍓   Tuesday
🍓 🍓 🍓   Wednesday
🍓 🍓 🍓   Thursday
🍓 🍓 🍓 🍓   Friday
🍓 🍓 🍓 🍓   Saturday

8. How can you use a computer to show your findings for the strawberry data?

Not shown until students advance to the next page of the assessment.

You decided to use the computer to make a graph showing the number of strawberries picked each day.

Strawberries Picked

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	2	3	3	4	4

9. Based on the pattern of strawberries picked on day 1 through day 6, select the letter for the number of strawberries that most likely will be collected on Sunday, day 7.
   2
   3
   4
   5

10. Explain why the response you picked is a pattern.

Part 3 Task: You learn about cybersecurity in school and want to share what you learned with your grown up at home to make sure that your family is safe.

11. Which of the following can cause cybersecurity problems when using a computer or iPad at home or school?
    Emailing a family member
    Following people on social media
    Cyberbullying
    Strong passwords

12. For the items you selected, describe what your family could do to avoid or deal with each of the cybersecurity problems you identified.

Affective Items

Respond to the following items using this 4-pt Likert scale: Strongly disagree (1), Disagree (2), Agree (3), Strongly agree (4)

Proposed Factor	Item
Confidence	13. I know what computer science is.
	14. I can learn computer science.[1]
	15. I am good at computer science.[1,2]
	16. I can do computer science.[3]
	17. People like me can do computer science.[2]
	18. I know a lot about computers.[2]
Interest	19. I would like to learn more about computer science. [1,2]
	20. I like computer science.[2,4]
	21. I would like to get a job in computer science when I get older.[3]
	22. I think computer science is interesting. [4]
	23. It is fun to do computer science. [2]
CS Utility	24. I can use computer science skills in my life. [2]
	25. Knowing computer science will help me to meet my goals. [2,3]
	26. I can use computers to help people and solve problems.[1,2,3]
	27. I will need to know computer science for my future job.[1]

Note. [1] Adapted from Elementary Student Coding Attitudes Survey, Mason & Rich, 2019. [2]Adapted from STARS Outreach Computer Attitude Survey, 2015 [3]Adapted from Programming Empowerment Survey, Kong et al., 2018. [4]Adapted from Hour of Code, Phillips & Brooks, 2017.