Test practice problems for TED 323

Information given on the test/on the board:

CGI problem types are:

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| Join, Result Unknown (JRU) | Join, Change Unknown (JCU) | Join, Start Unknown (JSU) |
| Separate, Result Unknown (SRU) | Separate, Change Unknown (SCU) | Separate, Start Unknown (SSU) |
| Part Part Whole, Whole  Unknown (PPW-WU) | Part-Part-Whole, Part Unknown (PPW-PU) |  |
| Compare, Difference Unknown (CDU) | Compare, Compared Quantity Unknown (CQU) | Compare, Referent Unknown (CRU) |

Sample test questions:

1. For each pair of problems on this page, **circle** the more **difficult** problem and **write a sentence explaining why** it is more difficult (for a child at the direct modeling stage of solving addition and subtraction problems).

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| --- | --- |
| Jeff has 3 puzzles. Todd has 4 puzzles. How many puzzles do they have all together? | Jeremy made 5 paper airplanes. Later he made 2 more paper airplanes. How many paper airplanes did he make in all? |
| John had 6 glow in the dark bugs. When he cleaned his room, he found some more glow in the dark bugs, and then he had 10 glow in the dark bugs. How many glow in the dark bugs did he find? | Ben built 7 block towers. How many more does he have to build to have 11 block towers? |
| Ben has 3 small toy cars. He has 9 more large toy cars than small toy cars. How many large toy cars does he have? | Clara has 11 Barbies. She has 5 more Barbies than Anne. How many Barbies does Anne have? |
| There are 7 children running in the race. 3 of the children are boys. How many of the children are girls? | Yesterday Gus made some origami animals. Today, he made 2 more origami animals. In all, he made 6 origami animals. How many origami animals did he make yesterday? |
| Kyle has 7 stuffed toy animals and 8 hard plastic toy animals. How many more hard plastic toy animals than stuffed toy animals does Kyle have? | Michelle had some toy animals. She gave 10 toy animals to Jane. Now she has 6 left. How many toy animals did Michelle have to begin with? |
| Briana had 9 Silly Bandz. She gave 3 Silly Bandz to Laura. How many Silly Bandz does Briana have left? | 2 of Leah’s crayons got lost. She started with 9 crayons. How many crayons does she have now? |
| There are 12 balloons in the room. 7 of the balloons are mylar and the rest are latex. How many of the balloons are latex? | There are 14 ounces of mixed juice in the pitcher. 8 ounces are apple juice, and the rest are grape juice. How many ounces of grape juice are in the pitcher? |

2. Explain the difference between each of these problem types:

a. JRU and PPW-WU

b. CQU and CRU

c. PPW-WU and CDU

d. JSU and SSU

3. Do children first figure out problems where there is a change over time, or problems where there is no change over time?

4. Which problem types have a change over time?

5. Draw out or explain how a child would direct model (an example of) each of these problem types:

JRU (using the joining strategy). JCU (using joining to). SRU (using separating from). CDU (using comparing)

6. Write a problem for a given problem type (eg. JRU)

7. Is it a good idea to tell children to add when they see the word "more" and subtract when they see the word "fewer" or "less"? Why or why not?

8. Explain how students might solve a word problem (eg. Sarah caught 5 fish. How many more does she have to catch to have 8 fish?)

a. By direct modeling

b. Using a counting strategy.

9. Give at least 3 examples of basic facts for which…

a. counting on is an efficient strategy

b. counting back is an efficient strategy

c. counting up to (for subtraction) is an efficient strategy

10. Which of these are considered basic facts?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 8+7 | 9-3 | 13+5 | 13-5 | 17-4 |

11. A child solves 5+3 by making 5 tally marks and 3 tally marks and counting all of them. Is this considered a counting strategy or a direct modeling strategy?

12. How is counting on from first different from counting on from higher?

13. What CGI type is most strongly associated with each of these counting strategies?

a. counting on

b. counting back

c. counting up to (for subtraction)

14. What are the two different variations on counting back that a child might use to solve 11-2?

15. Why do we want children to learn to use "counting up to" to solve subtraction problems?

16. Describe a lesson or game for helping children learn:

a. counting on

b. counting back

c. counting up to

17. Write a good word problem for introducing

a. counting on

b. counting back

c. counting up to