Observation map Math Assessment Reasoning Strategies |Addition

Questions	**answer observations**
3+5	☐ can't do it or guesses ☐ Counts all 1, 2, 3, ..., 8 out loud or counting using fingers. ☐ Counts on out loud by one's or uses fingers (starting with the 3 adding 5, saying 4, 5, 6, 7, 8) ☐ Counts on out loud by one's or uses fingers (starting with the 5 adding 3, saying 6, 7, 8) ☐ Holds up one hand with three fingers and the other hand with five fingers and sees it is eight without counting. ☐ Just knows it ☐ Imagines the column algorithm

Additional observations:

6+7	☐ can't do it or guesses ☐ Counts all 1, 2, 3, ..., 13 out loud or using fingers. ☐ Counts on out loud by one's or uses fingers starting with the 6, saying 7, 8, ..., 13) ☐ Split 7 in 4 and 3, uses 10 as a stepping stone: 6+4=10 10+3=13 ☐ Uses a doubles and near doubles strategy: "I know double 6 is 12 so 6+7 is one more so 13". Or " I know double 7 is 14 so 6+7 is one less than 14" ☐ Just knows it ☐ Imagines the column algorithm

Additional observations:

Questions	**answer observations**
9+8	☐ can't do it or guesses
	☐ Counts all 1, 2, 3, ...17 out loud or counting on fingers.
	☐ Counts on by one's out loud or uses fingers, starting with 9, saying 10, 11, ... , 17
	☐ Split 8 in 1 and 7 and uses 10 as 'stepping stone' 9+1=10 and 10+7=17
	☐ Reasoning using doubles: double 9 is 18 so 9+8 is one less so 17. Or double 8 is 16 and one more is 17
	☐ Uses a tens number: "10 plus 8 is 18 so 9 plus 8 is 17"
	☐ Just knows it
	☐ Imagines the column algorithm then counts up or adds

Additional observations:

Questions	answer observations
35+?=100	☐ can't do it or guesses
	☐ Thinks the answer is 75. Write a comment which scaffolding the student needs to be able to correct the answer
	☐ Answers 65, but can't explain
	☐ Imagines the column algorithm (or draws it in the air) 100-35 and mentions how to regroup and answers 65
	☐ Uses a mixed strategy of counting up from 35 by ones and tens: Counts on 5 by 1 to 40 and by 6 ten's to 100 and answers 65
	☐ Uses 5 and 10 numbers to count up from 35: 35+5=40....40+60=100.....5+60=65...so 35+65=100
	☐ Uses a partitioning and place value strategy: " I know 30+70=100 so 35+65=100"
	☐ For 100 - 35 separates ones and tens:"100-5=95, 95-30=65"
	☐ Uses a flexible numbers and benchmark strategy: "I know that 100-30=70, when you subtract 35, you subtract 5 more, so the answer is 65"
	☐ Uses benchmark numbers in a flexible way: "I know 25+75 =100 and 35 is 10 more so we need to add 10 less, it is 65"

Additional observations:

Questions	answer observations
105+987	☐ Can't do it or does not answer at all ☐ Guesses or estimates below 1,000 ☐ Guesses or estimates over 1,000 ☐ Imagines the column algorithm starting with 5+7 = 12 and regroups the ten +80 = 90, then adds 900+100 and answers 1092 ☐ Answers 1092 but can't explain ☐ Splits according to place value: 900+100 = 1,000; 80 (or 80+00=80), 5+7=12, then 1000+80+12=1092 or 80=12 = 92 + 1,000 = 1,092 ☐ Rounds 105 to 100 and adds 987+100=1087, then adds 5, so 1092. ☐ Uses the benchmark 1,000 for 987, adds 105 and subtracts 13 from 1,105 = 1,092

Additional observations:

Questions

How would you add up these amounts: $7.25 and $4.50 and $3.75 and $6.50?

answer observations

- [ ] Doesn't know, guesses
- [ ] Adds the whole dollars in the order provided; 7+4+3+6, adds numbers one by one so 7+4=11, plus 3 is 14, plus 6 is 20, and thinks total is $20. Write a comment which scaffolding the student needs to be able to correct the answer
- [ ] Adds the whole dollars using 10 as a benchmark; 7+3=10 and 4+6=10 so thinks the total is $20. Write a comment which scaffolding the student needs to be able to correct the answer
- [ ] Needs to write down the column algorithm per two amounts in the order given and gets $22
- [ ] Splits dollars and pennies, adds $0.25 + $0.75=$1 and $0.50 + $0.50=$1, then adds $7+$3=$10 and $4+$6=$10 and answers $22
- [ ] Imagines the column algorithm combining $7.25 + $3.75 = $11.00 and then $4.50 + $6.50 =$11.00 and says total is $22.00
- [ ] First estimates then calculates and checks if the answer makes sense: Estimate total must be more than $20, or close to $21, then calculates mentally for whole dollars and pennies separately, says "total is $22" and mentions that it makes sense because my estimate was $21

Additional observations:

Observation map Math Assessment Reasoning Strategies |Subtraction

Questions	**answer observations**
5-2	☐ Can't do it, guesses
	☐ Counts back incorrectly and says 5, 4, 3 out loud or on fingers and thinks answer is 3
	☐ Counts back correctly and says 4, 3, 2 out loud or on fingers and thinks answer is 2
	☐ Counts up from the smallest to the largest number out loud, says 3, 4, 5 or on fingers and thinks answer is 3
	☐ Just knows it

Additional observations:

9-6	☐ Doesn't know, guesses
	☐ Counts back incorrectly and says 9, 8, ..., 4 counting out loud or using fingers and thinks answer is 4
	☐ Counts back correctly and says 8, 7, ..., 3 counting out loud or using fingers, and answers 3
	☐ Counts up from the smallest to the largest number. Says 7, 8, 9 counting out loud or using fingers and answers 3
	☐ Uses a known fact to reason a new fact. Says I know 10 - 6 = 4, so 9 - 4 must be 3
	☐ Just knows it

Additional observations:

Questions	answer observations
14-7	☐ Doesn't know, guesses
	☐ Counts back incorrectly and says 14, 13, ... , 8 out loud or on fingers and thinks answer is 8
	☐ Counts back correctly, says 13, 12, ... , 7 out loud or on fingers and answers 7
	☐ Counts up from smallest number to largest number, says 8, 9,....,14 and answers 7
	☐ Imagines the column subtraction, answers 7
	☐ Uses a doubles strategy: I know double 7, or 7 plus 7 = 14 so take one 7 away and the other is left over, the answer is 7
	☐ Subtracts using 10 as "stepping stone" and splits 7 in 4 and 3, then subtracts 14-4=10 and 10-3=7
	☐ Just knows it

Additional observations:

Questions	answer observations
100-27	☐ Doesn't know or guesses ☐ Attempts to count back by ones but gets stuck. Counts back correctly, says 13, 12, ... , 7 out loud or on fingers and answers 7 ☐ Counts back correctly by tens and ones separately: 100-90-80-79-78-77....73Imagines the column subtraction, answers 7 ☐ Imagines the column subtraction with regrouping mentally, answers 73 ☐ Separates tens and ones: 100-20=80 and 80-7=73 ☐ Uses counting up to find the difference: 27 to 30 is 3 more, 30 to 100 is 70 more together 7+3 are 73

Additional observations:

745-98	☐ Doesn't know it or guesses ☐ Starts counting back by ones ☐ Starts counting back by tens ☐ Can't do it mentally and needs to write the column algorithm, answers 747 ☐ Imagines column algorithm with regrouping mentally, answers 747 ☐ Uses place value strategy and separates tens and ones: 745-90=655 and 655-8=647 ☐ Uses counting up to find the difference: 98 to 100 is 2 more, 100 is 700 is 600, 700-745 is 45 more together 2+600+45 is 647 ☐ Uses benchmark 100 for 98: so 745-100=645, then adds back the 2: 645+2=647 ☐ Uses a numberline concept to find the difference between 2 numbers; 98 to 100 = 2, 100 to 700 = 600, 600-645 = 45 so total distance on number line is 2+100+15=647

Additional observations:

Questions

What is the difference between 248 and 365?

answer observations

- [ ] Doesn't know, guesses
- [ ] Can't do it mentally and needs to write column algorithm with 248 on top
- [ ] Can't do it mentally and needs to write column algorithm with 365 on top, but subtracts 5 from 8 because you can't subtract 8 from 5
- [ ] Can't do it mentally and needs to write column algorithm with 365 on top and subtracts correctly: 117
- [ ] Imagines the column algorithm mentally and says 117
- [ ] Counts up from smallest number: +2=250, +100=350, +10=360, +5=365, the difference is 2+100+10+5=117
- [ ] Uses benchmarks 250 for 248 and 360 for 365 and says that difference = 110, then works in the compensations for the actual numbers: 248 is 2 less than 250 so add 2 and 365 is 5 more then 360 so add 5: the difference is 110+2+5=117
- [ ] Uses a numberline concept to find the difference between 2 numbers; 250 to 350=100 248 to 250 = 2 and 350 to 365=15, total distance on number line is 2+100+15=117

Additional observations: