Activity 9 Assessment
Mental Math Strategies

Developing Fluency with Whole Number Operations

Understands number relationships and properties and applies them to whole number operations.

$$? - 240 = 720 \qquad 50 \times ? = 2000$$
$$720 + 240 = 960 \qquad 2000 \div 50 = 40$$

"I solved each equation using an operation I am comfortable with."

Uses estimation to check reasonableness of solutions.

A forklift can carry 2000 kg. An operator is unloading boxes of shoes weighing 78 kg. How many boxes can the forklift safely carry at one time?
$$78 \times ? = 2000$$

"78 is close to 80. I know $80 \times 20 = 1600$ and $80 \times 5 = 400$. $1600 + 400 = 2000$. An estimate of 25 boxes seems reasonable."

Uses mental math strategies to solve single-step equations with larger numbers.

$$78 \times 25 = (70 + 8) \times (20 + 5)$$
$$= (70 \times 20) + (8 \times 20) + (70 \times 5) + (8 \times 5)$$
$$= 1400 + 160 + 350 + 40$$
$$= 1950$$

```
    7 8
  ×  2 5
  1 4 0 0   (70 × 20)
    1 6 0   (20 × 8)
    3 5 0   (70 × 5)
  +   4 0   (8 × 5)
  1 9 5 0
```

	70	8
20	1400	160
5	350	40

"I decomposed the numbers to make multiplying easier."

Observations/Documentation

Activity 9 Assessment
Mental Math Strategies

Developing Fluency with Whole Number Operations (cont'd)

Solves multi-step equations using mental math strategies and properties of operations.	Uses order of operations to solve equations and explains the effect when order is not followed.	Flexibly selects mental math strategies and applies order of operations to solve multi-step equations/problems.
$1560 + 1682 - 440 - 602 = ?$ $1560 - 440 = \mathbf{1120}$ $1682 - 602 = \mathbf{1080}$ $\mathbf{1120} + \mathbf{1080} = 2200$	$9 \times 8 - 3 + 16 \div 4 = 72 - 3 + 4$ $= 73$ "I have to do multiplication and division first. If the order isn't followed and I perform the operations in the order in which they appear, I get 21 R1."	To claim the prize in a contest, you must answer this skill-testing question: $19 + 11 \times 6 - 4 = ?$ $19 + 11 \times 6 - 4 = 19 + 66 - 4$ $= 20 - 1 + 66 - 4$ $= 20 + 66 - 1 - 4$ $= 86 - 5$ $= 81$

Observations/Documentation