

2. What sequence of operations would be used to calculate $(7 + 1) \cdot (8 - 3)$ on a normal (infix notation) calculator? How about on a RPN (postfix) calculator?

Normal(infix) calculator uses: $(7 + 1) * (8 - 3)$

RPN(postfix) calculator, it uses: $7 1 + 8 3 - *$

6. What are the advantages and disadvantages of typed arithmetic calculations?

Advantages:

Disadvantages:

8. Which of the following are illegal and why?

- `bipush 7`
- `bipush -7`
- `sipush 7`
- `ldc -7`
- `ldc2 -7`
- `bipush 200` \leftarrow illegal because `bipush` pushes a 1-byte signed integer that range between -128 to 127
- `ldc 3.5`
- `sipush -300`
- `sipush -300.0` \leftarrow illegal because `sipush` pushes a 2-byte signed integer.
- `ldc 42.15`

12. In the `?div` instruction, is the number divided by stored at the top of the stack or is it the second element?

First 2 elements will each involve 2 stack location and the top of the stack.

13. The surface area of a sphere is four times the area of a circle of equivalent radius. Write a postfix expression to calculate the surface area of a hemispherical dome of radius R .

Infix: $4 * \pi * R^2$

Postfix: $R R * \pi * 4 *$

14. Write a postfix expression for the arithmetic mean of the five numbers $a, b, c, d,$ and e .

$a b + c d + + e + 5 /$