

1. What is finite precision
2. List the source of error
3. Define error measurements
4. Define mathematical modeling
5. Define Accuracy and Precision
6. Change 35.625 into binary system

① Finite precision is a decimal representation of a number which has been rounded or truncated.

- ②
  1. Approximation Errors :- There are two types of approximation errors
    - a. Truncation or discretization errors
    - b. Convergence errors
  2. Roundoff Errors

③ Error Measurement

1. Absolute Error - is the magnitude of the difference b/w the true value  $x$  and the approximate value  $x_a$

2. Relative Error - is defined as the ratio of the absolute error to the size of  $x$ .

④ Mathematical modeling :- is a description of a system using mathematical concepts and language.

⑤ Accuracy refers to how closely a value agrees with the true value.  
Precision refers to how closely values agree with each other.

⑥ Change 35.625 into binary system

$$\begin{array}{r} 35 \\ \underline{10} \\ 25 \\ \underline{20} \\ 5 \end{array}$$

$$\begin{array}{r} 35 \\ \underline{20} \\ 15 \\ \underline{10} \\ 5 \end{array}$$

$(100011, 10)_2$

⑥,  $[35, 625]_{10} = [100011, 101]_2$

Dividen	<del>Q</del>	R
$35 \div 2$	17	1
$17 \div 2$	8	1
$8 \div 2$	4	0
$4 \div 2$	2	0
$2 \div 2$	1	0
$1 \div 2$	0	1

$I = \text{100011}$

Process	Product	Decimal	Integer
$0,625 \times 2$	1,25	.25	1
$0,25 \times 2$	<del>0,5</del>	.5	0
$0,5 \times 2$	1	0	1
}	}	}	}
}	}	}	}
}	}	}	}
}	}	}	}
}	}	}	}

$F = 101$

$[35,625]_{10} = [100011,101]_2$

$$\begin{array}{r} 35.625 \\ \underline{70} \\ 17 \\ \underline{34} \\ 1 \\ \underline{2} \\ 1 \end{array}$$

F

$$(100011, 10)_2$$

$$\textcircled{6}, [35, 625]_{10} = [100011, 101]_2$$

Dividen	<del>Q</del>	R
35 ÷ 2	17	1
17 ÷ 2	8	1
8 ÷ 2	4	0
4 ÷ 2	2	0
2 ÷ 2	1	0
1 ÷ 2	0	1

$$I = \text{100011}$$

Process	Product	Decimal	Integer
0,625 × 2	1,25	.25	1
0,25 × 2	0,5	.5	0
0,5 × 2	1	0	1
}	}	}	}
}	}	}	}
}	}	}	}
}	}	}	}

$$F = 101$$

$$[35, 625]_{10} = [100011, 101]_2$$