

# Unit 1: Functions and Numbers

Ch.1 Number and Algebra

1.2: Approximations and Error

## Section 2.2: Numbers in Calculations

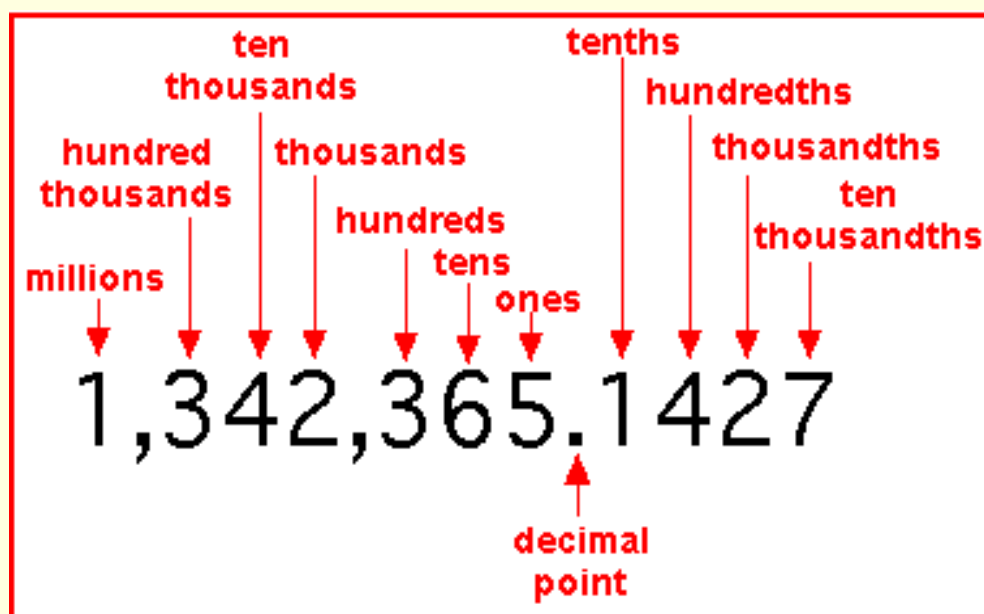
IB Syllabus: How do write answers from the calculator?

Approximation

Decimal places

Significant figures

Percentage errors



MathATube.com Together we'll learn

## Significant Figures and Decimal Places

1. How many significant figures does each number have?

a) 43.5  
3

b) 5673.7  
5

c) 1200  
2

d) 4.001  
4

e) 0.00452  
3

f) 0.00340  
3

g) 784000  
3

h) 0.450  
3

i) 4503450  
6

j) 0.000682  
2

k) 67.4500  
6

l) 0.56204  
5

## Significant Figures and Decimal Places

2. Round the following values to the requested number of significant figures or place value:

a) 2.526 [2 sf]

2.5

e) 0.4523 [2 sf]

0.45

b) 2.526 [hundredths]

2.53

f) 3.684 [tenths]

3.7

c) 24650 [1 sf]

20000

g) 5.6720 [hundredths]

5.67

d) 45627 [3 sf] 45600

h) 0.04537 [3 sf]

0.0454

## Percent Error

$$\text{Percent error} = \frac{v_A - v_E}{v_F} \times 100$$

3. Given the equation  $p = r^2 + 2qr$ ,
- Calculate the exact value of  $p$  when  $q = 3.6$  and  $r = 24$ .
  - Write your answer correct to two significant figures.
  - Find the percentage error between a) and b).

$$a) p = 24^2 + 2(3.6)(24) = 748.8$$

$$b) 750$$

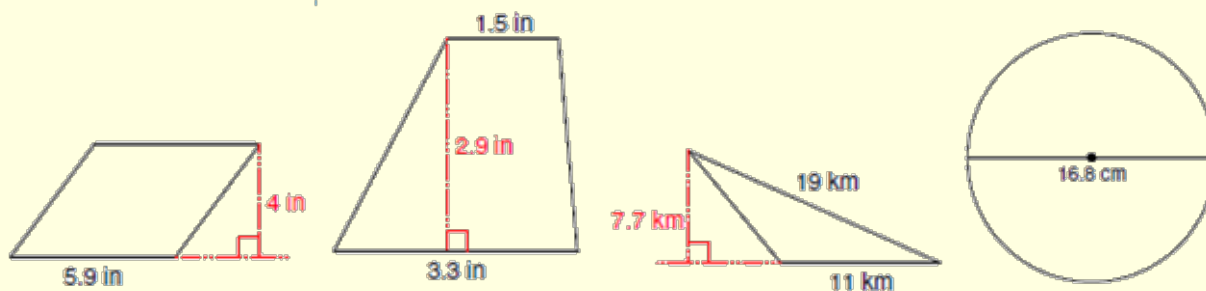
$$c) \frac{(750 - 748.8)}{748.8} \times 100 = 0.16025...%$$

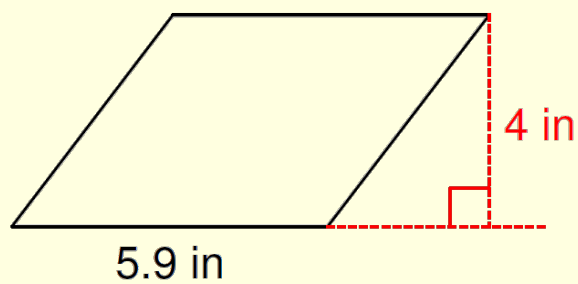
## Percent Error

$$\mathcal{E} = \frac{V_A - V_E}{V_E} \times 100\%$$

4. For each figure below:

- Use your formula booklet to find the exact area.
- Round your answer to the nearest tenth.
- Calculate the percentage error between your two answers.





Exact Area

23.6

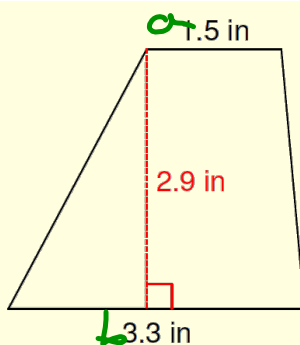
Rounded to tenth

23.6

Percentage Error

0%





Exact Area

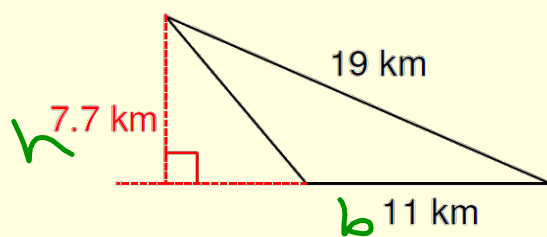
6.96

Rounded to tenth

7.0

Percentage Error

0.57%



Exact Area

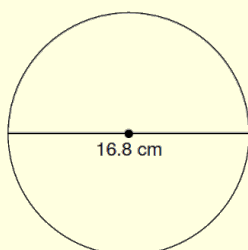
42.35

Rounded to tenth

42.4

Percentage Error

0.118%



Exact Area

$$8.4^2 \pi$$

$$70.56\pi$$

Rounded to tenth

$$221.7$$

Percentage Error

$$-0.0132\%$$

## Homework:

Students will complete pgs.11-21: 1H, 1I (odd), 1J, 1L