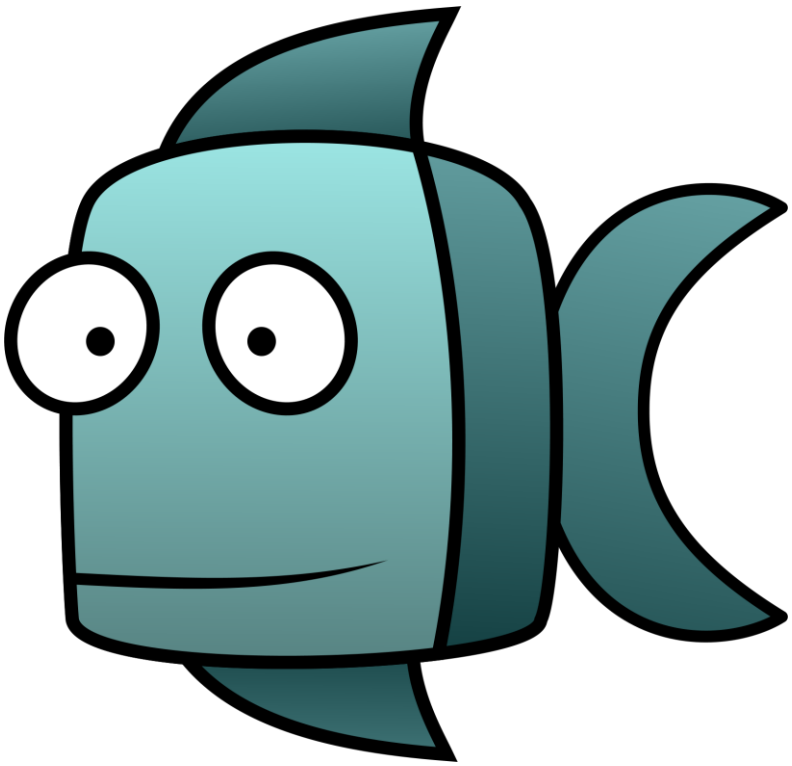
Mathematics 2.1

Unit Test 1

Practice

Name.....



1. $\frac{2}{3}$ 2 3 3.14 $\sqrt{35}$ 10 24 37 45 88

From the list of numbers above choose one that is

(i) an irrational number,

Answer (i) .....

[1]

(ii) the cube root of 27,

Answer (ii) .....

[1]

(iii) a multiple of 9,

Answer (iii) .....

[1]

(iv) a prime number,

Answer (iv) .....

[1]

(v) a factor of 44,

Answer (v) .....

[1]

(vi) the product of 6 and 4.

Answer (vi) .....

[1]

2. (a) The first four terms of a sequence are 12, 7, 2, –3, ……

(i) Write down the next two terms of the sequence.

Answer (a)(i) ……and ……

[2]

(ii) State the term-to-term rule for finding the next term of the sequence.

Answer (a)(ii) ……

[1]

(iii) Write down an expression for the *n*th term of this sequence.

Answer (a)(iii) ……

[2]

(b) The first four terms of another sequence are

–3, 2, 7, 12, …

Write down an expression for the *n*th term of this sequence.

Answer (b) ……

[2]

3. Numbers in standard form are written like this: $A \times 10^n$

Where A is a number bigger than 10 and n is an integer.

Write these numbers in order from smallest to largest.

5.7×10^3 6.32×10^5 8×10^4

_____ _____ _____ **[2]**

4. Write three million seven thousand eight hundred in standard form.

Answer _____

[2]

5. The number 0.48 can be written as 0.5 correct to 1 significant figure.

(a) Find an estimate for the sum

$9.87 - 5.79 \times 0.48$

by rounding each number to 1 significant figure. Show your working.

Answer .....

[1]

(b) Use your calculator to find the exact answer for the sum in **part (a)**.
Write down all the figures on your calculator.

Answer .....

[1]

6. (a) Sumire and Adriana share \$600 in the ratio 11:9

(i) Show that Sumire gets \$330

[2]

(ii) Find the amount that Adriana receives

Answer (a)(ii) .....

[1]

(b) An amount A can be increased by $p\%$ by using the formula:

$$A \times (1 + \frac{p}{100})$$

Increase \$600 by 15%

Answer (b) .....

[2]

SIMPLE INTEREST: For a starting amount of P at a rate of $r\%$ over n years

$$Simple\ Interest = P \times \frac{r}{100} \times n$$

7. (a) William Invests 2000 CHF at 3% simple interest over 5 years.

Calculate the amount of interest William earns

Answer (a) ..... **[2]**

COMPOUND INTEREST: For a starting amount of P at a rate of $r\%$ over n years

$$Final\ Balance = P \times \left(1 + \frac{r}{100}\right)^n$$

(b) Diego Invests 3000 CHF at 2% compound interest over 6 years.

Calculate the amount of *interest* Diego earns

Answer (b) .....

[3]

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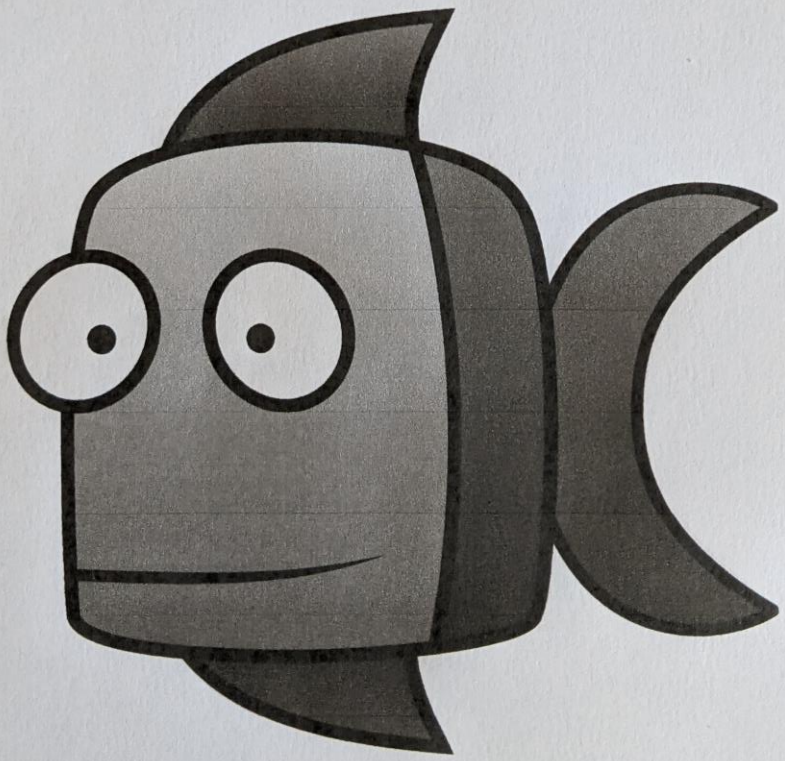
Name Solutions.....



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1. $\frac{2}{3}$ 2 3 3.14 $\sqrt{35}$ 10 24 37 45 88

From the list of numbers above choose one that is

(i) an irrational number,

something that can not be written as a fraction

Answer (i) $\sqrt{35}$ [1]

(ii) the cube root of 27,

$\sqrt[3]{27} = 3$

Answer (ii) 3 [1]

(iii) a multiple of 9,

Something in the 9 times table.

Answer (iii) 45 [1]

(iv) a prime number,

a number only divisible by 1 and itself

Answer (iv) 2 or 3 or 37 [1]

(v) a factor of 44,

Something that divides into 44 exactly

Answer (v) 2 [1]

(vi) the product of 6 and 4.

means multiplication

Answer (vi) 24 [1]

-5 -5 -5

2. (a) The first four terms of a sequence are 12, 7, 2, –3, ...

(i) Write down the next two terms of the sequence.

Answer (a)(i) -8 and -13

[2]

(ii) State the term-to-term rule for finding the next term of the sequence.

Answer (a)(ii) Subtract 5

[1]

(iii) Write down an expression for the *n*th term of this sequence.

$-5n$	$-5, -10, -15, -20, \ldots$
$-5n+17$	$12, 7, 2, -3$

Answer (a)(iii) $-5n+17$

[2]

(b) The first four terms of another sequence are

–3, 2, 7, 12, ...

Term to Term Rule is +5

Write down an expression for the *n*th term of this sequence.

$5n$	$5, 10, 15, 20, \ldots$
$5n-8$	$-3, 2, 7, 12$

Answer (b) $5n-8$

[2]

3. Numbers in standard form are written like this: $A \times 10^n$

Where A is a number bigger than 10 and n is an integer.

Write these numbers in order from smallest to largest.

5.7×10^3 6.32×10^5 8×10^4

$5.7 \times 10^3 = 5700$ $8 \times 10^4 = 80000$ $6.32 \times 10^5 = 632000$ [2]

4. Write three million seven thousand eight hundred in standard form.

~~3000~~ 3 007 800

Answer 3.0078×10^6 [2]

5. The number 0.48 can be written as 0.5 correct to 1 significant figure.

(a) Find an estimate for the sum

- $9.87 - 5.79 \times 0.48$ $\approx 10 - 6 \times 0.5$

by rounding each number to 1 significant figure. Show your working.

Multiplication comes first in this calculation!

$10 - 3 = 7$

Answer 7 [1]

(b) Use your calculator to find the exact answer for the sum in **part (a)**.
Write down all the figures on your calculator.

Answer 7.0908 [1]

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6. (a) Sumire and Adriana share \$600 in the ratio 11:9

(i) Show that Sumire gets \$330

$11+9=20$

$\$600 \div 20 = 30$

$30 \times 11 = 330$ as required [2]

(ii) Find the amount that Adriana receives

$30 \times 9 = 270$

Answer (a)(ii) ..... \$270 .....

[1]

(b) An amount A can be increased by $p\%$ by using the formula:

$$A \times (1 + \frac{p}{100})$$

Increase \$600 by 15%

$600 \times 1.15 =$

Answer (b) ..... \$690 .....

[2]

SIMPLE INTEREST: For a starting amount of P at a rate of $r\%$ over n years

$$Simple\ Interest = P \times \frac{r}{100} \times n$$

7. (a) William Invests 2000 CHF at 3% simple interest over 5 years.

Calculate the amount of interest William earns

Simple interest = $2000 \times 0.03 \times 5$

=

Answer (a) 300 CHF **[2]**

COMPOUND INTEREST: For a starting amount of P at a rate of $r\%$ over n years

$$Final\ Balance = P \times \left(1 + \frac{r}{100}\right)^n$$

(b) Diego Invests 3000 CHF at 2% compound interest over 6 years.

Calculate the amount of *interest* Diego earns

Final Balance = 3000×1.02^6

= 3378.49 CHF

So the interest *Answer (b)* .....

[3]

is $3378.49 - 3000$

= 378.49 CHF