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**Question: B. Answer the following questions. 1. Determine the ISBN check ...**

Answer the following:

**B. Answer the following questions.**

1. Determine the ISBN check digit for the book *Davao History* by Corcino, Ernesto (1998). The first 12 digits of the ISBN are **978971920070**.\_
2. A purchase order for the book *The Mathematics for the Modern World* by Dale Hathaway with the ISBN **9780201611298**. Verify if the ISBN is valid.
3. The book entitled *Basic Mathematics* authored by Eugenio Guhao and Nida Abangolan (2015) has an ISBN **978971821561**\_. Determine the ISBN check digit.
4. Verify if the ISBN for the book entitled *Mathematics of Investment* by Winston Sirug (2014) is valid. ISBN **9789719905805**.
5. Determine the ISBN check digit for the book *College Algebra* by Exconde et al (2013). The first 12 digits of the ISBN are **978971016725**.\_

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**Expert Answer** ⓘ



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1,022 answers

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Solution B:

1: ISBN : 978971920070\_

This is 13-digit ISBN.

Let the check digit be x.

Assign position to each number from right to left.

	9	7	8	9	7	1	9	2	0	0	7	0	x
<u>Position</u>	13	12	11	10	9	8	7	6	5	4	3	2	1

Multiply : odd number position by 1 4  
Even number position by 3 , and then sum up the product.

Sum:  $9 \times 1 + 7 \times 3 + 8 \times 1 + 9 \times 3 + 7 \times 1 + 1 \times 3 +$

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
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$$9 \times 1 + 2 \times 3 + 0 \times 1 + 0 \times 3 + 7 \times 1 + 0 \times 3 + x \times 1$$

$$= 9 + 21 + 8 + 27 + 7 + 3 + 9 + 6 + 0 + 0 + 7 + 0 + x$$

$$\text{sum} = 97 + x$$

For a valid ISBN, sum must be divisible by 10

Hence  $x=3$  is the check digit

2.  $9780201611298$

Position: 13 12 11 10 9 8 7 6 5 4 3 2 1

$$\text{sum} = 9 \times 1 + 7 \times 3 + 8 \times 1 + 0 \times 3 + 2 \times 1 + 0 \times 3 + 1 \times 1 + 6 \times 3 + 1 \times 1 + 1 \times 3 + 2 \times 1 + 9 \times 3 + 8 \times 1$$

$$\text{sum} = 9 + 21 + 8 + 0 + 2 + 0 + 1 + 18 + 1 + 3 + 2 + 27 + 8$$

$$= 100.$$

Since, the sum is divisible by 10, the remainder is zero.

Hence, ISBN is valid.

3. Let the check digit be  $x$ .

$$978971821561x$$

Position: 13 12 11 10 9 8 7 6 5 4 3 2 1

$$\text{sum} = 9 \times 1 + 7 \times 3 + 8 \times 1 + 9 \times 3 + 7 \times 1 + 1 \times 3 + 8 \times 1 + 2 \times 3 + 1 \times 1 + 5 \times 3 + 6 \times 1 + 1 \times 3 + x \times 1$$

$$\text{sum} = 9 + 21 + 8 + 27 + 7 + 3 + 8 + 6 + 1 + 15 + 6 + 3 + x$$

$$= 114 + x$$

Since, the sum must be divisible by 10.

Hence  $x=6$  is check digit  $[114 + 6 = 120 \div 10]$

4)

$$9789719905805$$

Position: 13 12 11 10 9 8 7 6 5 4 3 2 1

$$\text{sum} = 9 \times 1 + 7 \times 3 + 8 \times 1 + 9 \times 3 + 7 \times 1 + 1 \times 3 + 9 \times 1 + 9 \times 3 + 0 \times 1 + 5 \times 3 + 8 \times 1 + 0 \times 3 + 5 \times 1$$

$$\text{sum} = 9 + 21 + 8 + 27 + 7 + 3 + 9 + 27 + 15 + 8 + 5$$

$$= 139$$

Since after dividing 139 by 10, we get remainder = 9.

Hence, it is INVALID ISBN.

5) Let check digit be  $x$ .

9 7 8 9 7 10 1 6 7 2 5  $x$

Position: 13 12 11 10 9 8 7 6 5 4 3 2 1

$$\text{Sum} = 9 \times 1 + 7 \times 3 + 8 \times 1 + 9 \times 3 + 7 \times 1 + 1 \times 3 + 0 \times 1 + 1 \times 3 + 6 \times 1 + 7 \times 3 + 2 \times 1 + 5 \times 3 + x \times 1$$

$$\text{Sum} = 9 + 21 + 8 + 27 + 7 + 3 + 0 + 3 + 6 + 21 + 2 + 15 + x = 122 + x.$$

Hence check digit is  $x = 8$

$\{ 122 + 8 = 130 \text{ is divisible by } 10 \}$

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