



UNSW
S Y D N E Y

CANDIDATE

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TEST

Quiz 1

Subject code	--
Evaluation type	--
Test opening time	14.02.2024 07:00
End time	21.02.2024 07:00
Grade deadline	--
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Threshold

Question	Status	Marks	Question type
1.1	Correct	1/1	Numeric Entry
1.2	Correct	1/1	Multiple Response
1.3	Correct	1/1	Multiple Response
1.4	Correct	1/1	Multiple Response
1.5	Correct	1/1	Numeric Entry

Mastery

Question	Status	Marks	Question type
2.1	Correct	1/1	True / False
2.2	Correct	1/1	Multiple Response
2.3	Correct	1/1	Multiple Response
2.4	Partially Correct	0.6000000238418579/1	Multiple Response
2.5	Partially Correct	0.20000000298023224/1	Multiple Response

1.1 How many integers between -101 and 1001 (inclusive) are divisible by 3?:  .

1.2 Which of the following will give:

- $x+1$ if x is an integer, and
- The smallest integer greater than x if x is not an integer.

Select all that apply:

☐ $\lceil x+1 \rceil$

☐ $2-\lfloor 1-x \rfloor$

☒ $\lfloor x+1 \rfloor$



☒ $\lfloor x \rfloor + 1$



☐ $\lceil x \rceil + 1$

☒ $2-\lceil 1-x \rceil$



1.3 Which of the following is true for all real numbers x ?

Select all that apply:

☒ $\lceil x \rceil = \lceil \lceil x \rceil \rceil$



☐ $\lfloor x \rfloor < \lceil x \rceil$

☒ $\lceil \lfloor x \rfloor \rceil \leq \lceil x \rceil$



☐ $\lfloor \lceil x \rceil \rfloor \leq \lfloor x \rfloor$

1.4 Which of the following propositions are true?

Select all that apply:

☒ For every integer x , there exists an integer y such that $x|y$.



☒ For every integer x , there exists an integer y such that $y|x$.



☒ There exists an integer y , such that for every integer x , $x|y$.



☒ There exists an integer y , such that for every integer x , $y|x$.



☐ None of the above

1.5 What is $\gcd(286, 396)$?

2.1 True or False:

For all positive integers m, n and all integers a, b if $a \equiv_{(m)} b$ and $a \equiv_{(n)} b$ then $a \equiv_{(mn)} b$

☒ False



☐ True

2.2 Which of the following will give:

- 1 if $x > 0$, and
- 0 if $x < 0$

Select all that apply:

☒ $(x + |x|) / (2x)$



☒ $x / (2|x|) + 1/2$



☐ $x / \lceil x \rceil$

☐ $|x+1| / (2x)$

☐ $x - |x|$

2.3 Suppose x, y and z are arbitrary integers such that $x|y$ and $y|z$.

Which of the following are always true (i.e. true for any such x, y, z)?

Select all that apply:

☒ $x|y+z$



☐ $x+y|y+z$

☒ $x|yz$



☐ $xy|z$

☒ $xy|yz$



☐ $x+y|z$

2.4 Let m , n and k be arbitrary integers, with $k \geq 1$ and $n < m$.

Which of the following counts the number of multiples of k between n (exclusive) and m (exclusive)?

Select all that apply:

☒ $\lfloor (m-n-1)/k \rfloor$



☐ $\lfloor m/k \rfloor - \lceil n/k \rceil$

☐ $\lfloor (m-n)/k \rfloor$

☒ $\lfloor (m-1)/k \rfloor - \lfloor n/k \rfloor$



☐ $\lceil m/k \rceil - \lfloor n/k \rfloor$

2.5 Which of the following hold for all real numbers x and y ?

Select all that apply:

☐ $|xy| \geq |x| \cdot |y|$



☐ $\lceil x+y \rceil \geq \lceil x \rceil + \lceil y \rceil$

☐ $|x+y| \geq |x| + |y|$

☐ $\lceil xy \rceil \geq \lceil x \rceil \cdot \lceil y \rceil$

☒ $\lfloor xy \rfloor \geq \lfloor x \rfloor \cdot \lfloor y \rfloor$



☒ $\lfloor x+y \rfloor \geq \lfloor x \rfloor + \lfloor y \rfloor$

