PART 1: QUESTIONS

Name:_____ **Age:**_____ **Id:**_____ **Course:**_____

Arithmetic - Exam 1 **Lesson: 1-5**

Instructions:

- Please begin by printing your Name, your Age, your Student Id , and your Course Name in the box above and in the box on the solution sheet.
- You have 90 minutes (class period) for this exam.
- You can not use any calculator, computer, cellphone, or other assistance device on this exam. However, you can set our flag to ask permission to consult your own one two-sided-sheet notes at any point during the exam (You can write concepts, formulas, properties, and procedures, but questions and their solutions from books or previous exams are not allowed in your notes).
- Each multiple-choice question is worth 5 points and each extra essay-question is worth from 0 to 5 points. (Even a simple related formula can worth some points).
- Set up your flag if you have a question.
- Relax and use strategies to improve your performance.

Exam Strategies to get the best performance:

- Spend 5 minutes reading your exam. Use this time to classify each Question in (E) Easy, (M) Medium, and (D) Difficult.
- Be confident by solving the easy questions first then the medium questions.
- Be sure to check each solution. In average, you only need 30 seconds to test it. (Use good sense).
- Don't waste too much time on a question even if you know how to solve it. Instead, skip the question and put a circle around the problem number to work on it later. In average, the easy and medium questions take up half of the exam time.
- Solving the all of the easy and medium question will already guarantee a minimum grade. Now, you are much more confident and motivated to solve the difficult or skipped questions.
- Be patient and try not to leave the exam early. Use the remaining time to double check your solutions.

1. Given:

I. Whole numbers are positive numbers, including zero, without any decimal or fractional parts.

II. A whole number is any integer number that does not include a fractional or decimal part.

III. A whole number is the integer part of a mixed number or a decimal part.

a) Only I is correct
b) Only II is correct
c) Only III is correct
d) I, II, and III are correct
e) None of the above.

Solution: a

Whole numbers are positive numbers, including zero, without any decimal or fractional parts. This means that, for example, the numbers 0, 1, 2, 3, 4, 5, 6, and 7 are all whole numbers. Numbers such as: -1, 2.5, or 4 ½ are not whole numbers.

2. The addition 6,749 + 5,653 is:

a) 12,402
b) 12,412
c) 12,422
d) 12,502
e) 13,402

Solution: c

	T	H	T	U
	1	**1**	**1**	
	6	7	4	9
+	5	6	5	3
1	**2,**	**4**	**0**	**2**

3. The subtraction 15,122 – 3,358 is:

a) 10,764
b) 11,664
c) 11,754
d) 11,761
e) 11,764

Solution: a

15,122 – 3,358 = 11,764

	TT	T	H	T	U
		4	**10**	**11**	**12**
	1	~~5~~	~~1~~	~~2~~	~~2~~
–		3	3	5	8
	1	**1,**	**7**	**6**	**4**

4. The subtraction 5,000,025 – 14,987 is:

a) 4,995,038
b) 4,984,038
c) 4,985,038
d) 4,985,039
e) 5,985,038

Solution: c

5,000,025 – 14,987 = 4,985,038

	M	HT	TT	T	H	T	U
	4	**9**	**9**	**9**	**9**	**11**	**15**
	~~5~~	~~0~~	~~0~~	~~0~~	~~0~~	~~2~~	~~5~~
-			1	4	9	8	7
	4,	**9**	**8**	**5,**	**0**	**3**	**8**

5. Fred played a video game and scored 22,453 points in first round and 33,673 points in second round. He received a bonus round and scored 135 extra points. How many points did he have at the end of the game?

a) 56,261 points
b) 56,266 points
c) 56,361 points
d) 57,261 points
e) 66,261 points

Solution: b

	TT	T	H	T	U
		1	**1**	**1**	
	2	2	4	5	3
	3	3	6	7	3
+			1	3	5
	5	**6 ,**	**2**	**6**	**1**

6. The Census Bureau put Hawaii's population in July 2020 was 1,465,626 and in July 2021 was 1,455,268. Thus, From July 2020 to July 2021,

a) Hawaii's population decreased 10,358 people.
b) Hawaii's population increased 10,358 people.
c) Hawaii's population decreased 11,358 people.
d) Hawaii's population increased 11,358 people.
e) None of the above.

Solution: a

The difference 1,465,626 − 1,455,268 = 10,358

	M	HT	TT	T	H	T	U
					5	**11**	**16**
	1	4	6	5	~~6~~	~~2~~	~~6~~
-	1	4	5	5	2	6	8
	0	**0**	**1**	**0 ,**	**3**	**5**	**8**

Since the Hawaii's population was bigger in 2020, we conclude that it decreased 10,358 people.

7. The multiplication 223 x 21 is:

a) 4,683
b) 4,684
c) 4,693
d) 4,783
e) 5,683

Solution: a

$$\begin{array}{r} 223 \\ \times\ 21 \\ \hline 223 \\ +\ 4460 \\ \hline 4,683 \end{array}$$

8. The multiplication 7462 x 132 is:

a) 984,983
b) 984,984
c) 984,994
d) 985,984
e) 994,984

Solution: b

7462 x 132 = 984,984

$$\begin{array}{r} {\scriptstyle 1\ \ \ \ } \\ {\scriptstyle 1\ 1\ \ \ } \\ 7462 \\ \times\ 132 \\ \hline {\scriptstyle 1\ 1\ \ \ } \\ 14924 \\ 223860 \\ +\ 746200 \\ \hline 984{,}984 \end{array}$$

9. The division 369 ÷ 5 has:

a) quotient 72 and remainder 0.
b) quotient 72 and remainder 1.
c) quotient 73 and remainder 2.
d) quotient 73 and remainder 3.
e) quotient 73 and remainder 4.

Solution: e

$$\begin{array}{r} 073 \quad \textbf{(Quotient)} \\ 5\overline{)\,369} \\ -\,0 \\ \hline 36 \\ -\,35 \\ \hline 19 \\ -\,15 \\ \hline 4 \quad \textbf{(Remainder)} \end{array}$$

10. Richard took along 6 friends to a local farm to pick oranges. They picked 546 oranges in all. How many oranges will each one get, if they decided to share them equally?

Hint: Read the problem carefully!

a) 91 oranges.
b) 88 oranges.
c) 83 oranges.
d) 80 oranges.
e) 78 oranges.

Solution: e

They decided to share them equally among 7 people including Richard.

Then, $546 \div 7 = 78$

11. Calculate $0.09 + 2.48 + 9.1 = ?$

a) 10.67
b) 10.77
c) 11.57
d) 11.66
e) 11.67

Solution: e

	T	U	t	h
			1	
		0	0	9
+		2	4	8
		9	1	0
	1	1	6	7

12. Calculate $3.53 - 1.71 = ?$

a) 1.81
b) 1.82
c) 1.83
d) 1.92
e) 1.94

Solution: b

	T	U	t	h
		2	15	
		~~3~~	5	3
-		1	7	1
		1	8	2

13. Multiply $7.23 \times 1.2 = ?$

a) 8.666
b) 8.671
c) 8.676
d) 8.776
e) None of the above.

Solution: c

$$\begin{array}{r} 7.23 \\ \times\ 1.2 \\ \hline 1446 \\ +\ 7230 \\ \hline 8.676 \end{array}$$ (Three decimals)

14. Find the remainder of the division $5.43 \div 0.2 = ?$

a) 0.1
b) 0.01
c) 0.001
d) Doesn't exist.
e) None of the above.

Solution: b

$$0.2\overline{)5.43} \qquad 2\overline{)54.3}$$

$$\begin{array}{r} 27.1 \\ 2\overline{)54.3} \\ -4 \\ \hline 14 \\ -14 \\ \hline 03 \\ -2 \\ \hline 1 \end{array}$$ (Quotient)

Using the remainder formula:

Remainder = Dividend – Divisor x Quotient

Remainder = 5.43 – 0.2 x 27.1 = 0.01.

15. Alex purchased $25 in candies at a store. The cashier gave him only $23.32 in change from a $50 bill. The cashier adds some money for tax. How much tax Alex paid?

a) $1.66
b) $1.67
c) $1.68
d) $1.69
e) None of the above.

Solution: c

Without tax, Alex would have paid:

$50 – $25 = $25

Since his change was only $23.32, then

Tax = $25 – 23.32 = $1.68

16. Given:

I. $\frac{8}{11} + \frac{3}{11} = 1$

II. $\frac{8}{11} - \frac{5}{11} = \frac{3}{11}$

III. $\frac{8}{11} \times \frac{11}{8} = 1$

IV. $\frac{8}{11} \div \frac{11}{8} = \frac{64}{121}$

Then:

a) Only IV is incorrect.
b) Only III is incorrect.
c) Only II is incorrect.
d) Only I is incorrect.
e) None of the above.

Solution: e

All statements are correct.

17. Calculate $\frac{1}{3} - \frac{1}{5} = ?$

a) $\frac{1}{15}$ b) $\frac{2}{15}$ c) $\frac{7}{15}$ d) $\frac{11}{15}$ e) $\frac{13}{15}$

Solution: b

$$\frac{1}{3} - \frac{1}{5} = \frac{1 \times 5}{3 \times 5} - \frac{1 \times 3}{5 \times 3}$$

$$= \frac{5}{15} - \frac{3}{15}$$

$$= \frac{2}{15}$$

18. Calculate $\frac{22}{5} \times \frac{10}{11} = ?$

a) 3 b) 4 c) 5 d) 6 e) None of the above.

Solution: c

$$\frac{22}{5} \times \frac{10}{11} = \frac{\cancel{22}^{2}}{\cancel{5}_{1}} \times \frac{\cancel{10}^{2}}{\cancel{11}_{1}} = 4$$

19. Solve: $\frac{33}{140} \div \frac{11}{20} = ?$

a) $\frac{2}{7}$ b) $\frac{4}{7}$ c) $\frac{6}{7}$ d) 1 e) None of the above.

Solution: a

$$\frac{33}{140} \div \frac{11}{20} = ?$$

$$\frac{\cancel{33}^{3}}{\cancel{140}_{7}} \times \frac{\cancel{20}^{1}}{\cancel{11}_{1}} = \frac{3 \times 1}{7 \times 1} = \frac{3}{7}$$

20. In a party there were 15 children. One-fifth of the children learnt piano, three-fifths of the children learnt guitar, and the rest of the children learnt drums. How many children learnt drums?

a) 0 b) 2 c) 4 d) 6 e) None of the above.

Solution: e

Learnt piano: $15 \times \frac{1}{5} = 3$ children.

Learnt guitar: $15 \times \frac{3}{5} = 9$ children.

Learnt drums = Total - Learnt piano - Learnt guitar

Learnt drums $= 15 - 3 - 9 = 3$ children.

PART 2: SOLUTIONS

Consulting

Name:_____ **Age:**_____ **Id:**_____ **Course:**_____

Multiple-Choice Answers

Questions	A	B	C	D	E
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Let this section in blank

	Points	Max
Multiple Choice		100
Extra Points		25
Consulting		10
Age Points		25
Total Performance		160
Grade		A

Extra Questions

21. Ten friends want to share 4 pies so that they each get the same amount. How much did each friend get?

Solution: Each friend got $\frac{2}{5}$ pie.

$4 \div 10 = \frac{4}{10} = \frac{2}{5}$

Each friend got $\frac{2}{5}$ pie.

22. Find the quotient $q(x)$ with 3 decimals place of the division $137 \div 8$.

Solution: $q(x) = 17.125$

$$
\begin{array}{r}
17.125 \quad \text{(Quotient)} \\
8\overline{)\,137.000} \\
-\,8 \\
\hline
57 \\
-\,56 \\
\hline
10 \\
-\,8 \\
\hline
20 \\
-\,16 \\
\hline
40 \\
-\,40 \\
\hline
0
\end{array}
$$

23. The gas pump fills the tank at a rate of 10/3 gallons per minute. Mark's car tank has only 1/6 of its capacity of 12 gallons. How long would it take for Mark to fill up the tank?

Solution: 3 min

The total gas to fill the Mark's tank is:

$(1 - \frac{1}{6}) \times 12 = \frac{5}{6} \times 12 = 10$ gallons

Time to fill Mark's tank is:

10 gallons $\div \frac{10}{3} = 10 \text{ x } \frac{3}{10} = 3$ min

24. Find $\frac{1}{3} + \frac{1}{4} + \frac{1}{6} = ?$

Solution: $\frac{1}{4}$

- LCD Method: LCD (3,4,6) = 12.

$$\frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{1 \text{ x } 4}{3 \text{ x } 4} + \frac{1 \text{ x } 3}{4 \text{ x } 3} + \frac{1 \text{ x } 2}{6 \text{ x } 2} = \frac{4+3+2}{12} = \frac{9}{12} = \frac{3}{4}$$

25. Solve the following quadratic equation:

$$x^2 - 5x + 6 = 0$$

Quadratic equation is learned in Algebra I and it is not in Arithmetic. Thus, draw a happy face to receive a full credit.

Bonus: If you solve the quadratic equation, you will receive an extra 5 points.

Solution: $x = 2$ or $x = 3$

or

$$x^2 - 5x + 6 = 0$$
$$+1 + 6$$
$$+2 + 3$$
$$x = 2 \text{ or } x = 3$$