AM 1101

Sample Test: Modules 1 & 2

Whole Numbers & Fractions

Name: Solns/ 90

Class: _____

Date: _____

Note: Electronics devices can be used to check your answers, but you must show all workings to receive full credit.

Answer all questions on this paper and show all workings for full credit.

Part 1: Add the following whole numbers. [1, 2 marks]

1. 35 + 24

$$\begin{array}{r} 35 \\ +\ 24 \\ \hline 59 \end{array}$$ ①

2. 972 + 992 + 909

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ 972 \\ 992 \\ +\ 909 \\ \hline 2873 \end{array}$$ ②

Part 2: Subtract the following whole numbers. [1, 2 marks]

3. 98 – 47

$$\begin{array}{r} 98 \\ -47 \\ \hline 51 \end{array}$$ ①

4. 653 – 169

$$\begin{array}{r} {\scriptstyle 5\ 14} \\ 6\not{5}3 \\ -\ 169 \\ \hline 484 \end{array}$$ ②

Part 3: Multiply the following whole numbers. [1, 2, 2, ~~3~~ 2 marks]

5. 41 x 5

$$\begin{array}{r} 41 \\ \times\ 5 \\ \hline 205 \end{array}$$ ①

6. 46 x 17

$$\begin{array}{r} {\scriptstyle 4} \\ 46 \\ 17 \\ \hline 322 \\ 460 \\ \hline 782 \end{array}$$ ②

7. 5124 x 51

```
   1 2
  5124
    51
 ------
 15124
+256200
 -------
 261,324
```

②

8. 500 x 400

```
    500
   x400
  ------
    000
   0000
+200000
 -------
 209000
```

②

Part 4: Divide the following whole numbers. [1, 2, 3 marks]

9. $4\overline{)220}$

```
  55
4)220
 -20
  20
 -20
  0R
```

①

55 R0

10. $5\overline{)4942}$

```
  988
5)4942
 -45
   44
  -40
    42
    40
    2R
```

②

988 R2

11. $66\overline{)1054}$

```
    15
66)1054
  -66
   394
  -330
    64
```

③

15 R64

Part 5: Round the following numbers to the correct place value.

12. Round 6,992 to the nearest hundred. [1 mark]

7000

13. Round 5, 972, 754 to the nearest thousand. [1 mark]

5,973,000

(5)

14. Round 198,403 to the nearest ten. [1 mark]

198,400

15. Round 4,063,850 to the nearest ten thousand. [1 mark]

4060,000

Part 6: Word Problems

16. An electrician uses the following lengths of Number 12 wire: 82 inches, 185 inches, and 1461 inches. How much wire, in inches, did the electrician use in total? [2 marks]

$$\begin{array}{r} 82 \\ 185 \\ 1461 \\ \hline 1728 \text{ in} \end{array}$$

(2)

The electrician used 1728 in of electrical wire.

17. A total of 384 cubic yards of earth must be excavated for a basement. If 195 cubic yards have been removed, how many more cubic yards must be removed? [2 marks]

$$\begin{array}{r} {}^{2}\cancel{3}{}^{17}\cancel{8}4 \\ -\ 195 \\ \hline 189 \end{array}$$

(2)

189 cubic yards must be removed.

18. Boards are cut 21 inches long to serve as fire stops between studs. If 386 fire stops are to be cut, how many inches of boards are needed? (Ignore wastage due to cutting.) [2 marks]

$$\begin{array}{r} 386 \\ \times 21 \\ \hline 386 \\ 7720 \\ \hline 8106 \end{array}$$

8106 in of board are needed.

(2)

19. A mason lays an average of 121 bricks per hour. How many hours will it take her to lay 4356 bricks? [2 marks]

$$\begin{array}{r} 36 \\ 121\overline{)4356} \\ -363 \\ \hline 726 \\ 726 \\ \hline 0R \end{array}$$

It will take her 36 hours

(2)

Part 7: Order of Operations

Simplify each of the following. BEDMAS

20. $8 \times 7 + 6^2 - (7-3)^3$ [3 marks]

$= 8 \times 7 + 6^2 - 4^3$

$= 8 \times 7 + 36 - 4^3$

$= 8 \times 7 + 36 - 64$

$= 56 + 36 - 64$

$= 92 - 64$

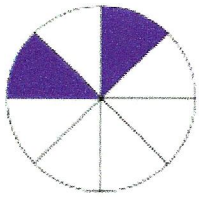
$= 28$

(3)

21. $\dfrac{6-\left[3^2-(5+2)\right]}{10-3^2}$ [3 marks] ③

$= \dfrac{6-[3^2-7]}{10-3^2} = \dfrac{6-[9-7]}{10-3^2} = \dfrac{6-2}{10-3^2} = \dfrac{6-2}{10-9} = \dfrac{4}{1} = 4$

22. Write the fraction or mixed number that represents the shaded region in each diagram.

a)  $\frac{2}{8} = \frac{1}{4}$ ①

b)  $1\frac{2}{3}$ ④

23. Change $5\frac{1}{6}$ to an improper fraction.

$\dfrac{5\times6+1}{6} = \dfrac{30+1}{6} = \dfrac{31}{6}$ ①

24. Change $\frac{15}{6}$ to an improper fraction and reduce if necessary.

$= 2\frac{3}{6} = 2\frac{1}{2}$

$6\overline{)15}$ 2, -12, $3R$ ②

25. Find the equivalent fractions

a) $\frac{3}{5} = \frac{24}{40}$ (1)

$5 \times 8 = 40$

$3 \times 8 = 24$

b) $\frac{5}{8} = \frac{15}{24}$ (1)

$8 \times 3 = 24$

$5 \times 3 = 15$

26. Add the following fractions and reduce if necessary.

a) $\frac{2}{7} + \frac{4}{7} = \frac{2+4}{7} = \frac{6}{7}$ (2)

b) $\frac{1}{8} + \frac{3}{4} = \frac{1}{8} + \frac{6}{8} = \frac{7}{8}$ (3)

c) $4\frac{1}{3} + \frac{5}{12} = \frac{4 \times 3 + 1}{3} + \frac{5}{12} = \frac{13}{3} + \frac{5}{12} = \frac{52}{12} + \frac{5}{12} = \frac{57}{12} = \frac{19}{4}$

or $4\frac{3}{4}$ (4)

$4\overline{)19}$ quotient 4, -16, remainder 3

27. Subtract each of the following fractions and reduce if necessary.

a) $\frac{7}{9} - \frac{4}{9}$ = $\frac{7-4}{9} = \frac{3}{9} = \frac{1}{3}$ (1)

b) $\frac{3}{4} - \frac{1}{3}$ = $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$ (2)

c) $5\frac{1}{4} - 2\frac{2}{3}$ = $\frac{5\times4+1}{4} - \frac{2\times3+2}{3} = \frac{21}{4} - \frac{8}{3} = \frac{63}{12} - \frac{32}{12}$

$= \frac{31}{12}$ or $2\frac{7}{12}$ (4)

28. Multiply the following fractions and reduce if necessary.

a) $\frac{1}{4} \times \frac{3}{8} = \frac{3}{32}$ (1)

b) $\frac{4}{1} \times \frac{3}{16} = \frac{12}{16} \div \frac{4}{4} = \frac{3}{4}$ (2)

c) $\frac{4}{9} \times 1\frac{1}{3} = \frac{4}{9} \times \frac{4}{3} = \frac{16}{27}$ (2)

29. Divide each of the following fractions and reduce if necessary.

a) $\frac{1}{3} \div \frac{3}{4} = \frac{1}{3} \times \frac{4}{3} = \frac{4}{9}$ (2)

b) $5 \div \frac{1}{2} = \frac{5}{1} \times \frac{2}{1} = \frac{10}{1} = 10$ (2)

c) $\frac{9}{10} \div \frac{3}{1} = \frac{9}{10} \times \frac{1}{3} = \frac{9}{30} = \frac{3}{10}$ (2)

d) $2\frac{1}{6} \div 3\frac{1}{4} = \frac{13}{6} \div \frac{13}{4}$ (3)

$= \frac{13}{6} \times \frac{4}{13} = \frac{4}{6} = \frac{2}{3}$

30. Simplify each of the following expressions and reduce if necessary.

a) $1\frac{1}{3}\times 2\div\left(1-\frac{1}{2}\right)$	b) $2^2\div\left(1\frac{1}{6}\times\frac{4}{3}\right)$
(3)	(4)
$=\frac{4}{3}\times 2\div\left(\frac{1}{2}\right)$	$=2^2\div\left(\frac{7}{6}\times\frac{4}{3}\right)=2^2\div\left(\frac{28}{18}\right)$
$=\frac{4}{3}\times\frac{2}{1}\times\frac{2}{1}=\frac{16}{3}$ or $5\frac{1}{3}$	$=2^2\div\left(\frac{14}{9}\right)=\frac{4}{1}\times\frac{9}{14}=\frac{36}{14}$
	$=\frac{18}{7}$ or $2\frac{4}{7}$

31. Answer each of the following problems using fractions

a) If $2\frac{1}{2}$ liters of oil are to be evenly divided into 4 smaller cans, how much oil will be in each smaller can?

(2)

$2\frac{1}{2}\div 4=\frac{5}{2}\div\frac{4}{1}=\frac{5}{2}\times\frac{1}{4}=\frac{5}{8}$

Each smaller can will hold $\frac{5}{8}$ liters

b) An apprentice needs to cut three pieces of pipe that measure $4\frac{1}{3}$ cm, $8\frac{2}{5}$ cm and $6\frac{7}{15}$ cm. What length of pipe does he need to cut all three pieces? (2)

$4\frac{1}{3} + 8\frac{2}{5} + 6\frac{7}{15} = 4\frac{5}{15} + 8\frac{6}{15} + 6\frac{7}{15}$

$4\frac{5}{15}$
$8\frac{6}{15}$
$6\frac{7}{15}$
$18\frac{18}{15} = 18 + 1 + \frac{3}{15} = 19\frac{3}{15} = 19\frac{1}{5}$ cm

→ He needs $19\frac{1}{5}$ cm of pipe.

c) A plastic tarp measures $2\frac{1}{2}$ meters long by $1\frac{1}{4}$ meters wide. What is its area in square meters? (Area = length x width) (2)

$A = 2\frac{1}{2} \times 1\frac{1}{4} = \frac{5}{2} \times \frac{5}{4} = \frac{25}{8}$ or $3\frac{1}{8}$ square meters.

The area of the tarp is $3\frac{1}{8}\ m^2$

d) A worker cuts $12\frac{3}{4}$ meters of wire from a roll 20 meters long. How much of the roll is left? (2)

$\frac{20}{1} - 12\ 3/4$

$19\ \frac{4}{4}$
$-\ 12\ 3/4$
$7\ \frac{1}{4}$

$7\frac{1}{4}$ m is left.