DOUGLAS

Practice Assessment
MATU Arithmetic Placement

The following problems are similar to those on the MATU Arithmetic Assessment. You can use these problems and solutions to practice and prepare for this.

Section A – Whole Numbers

1]   8
     + 7

2]   1637
     +   66

3]   3047
     - 663

4]   16
      -   3

5]   3867
     -   58

6]   2004
     -   36

7]   9
      x 6

8]   3607
     x   26

9]   306
       x 26

10]   6 ÷ 4 =

11]   7)‾5‾3‾

12]   23)‾3‾5‾1‾9‾

13]   To cut one shelf 24 centimetres long and two shelves 65 centimetres long from a single board, how long must the board be?

14]   A couch costs $927. $783.26 has been saved so far. How much more is needed?

15]   A family can save $75 each month to buy a new TV which costs $675. How many months will it take before they can buy the TV?

16]   In the warehouse, 432 containers of yogurt have been delivered. 12 containers can go in each box. How many boxes are needed for today's order?

Section B – Common Fractions

1] $\dfrac{1}{8} + \dfrac{3}{8} =$

2] $\dfrac{5}{6} + 2\dfrac{1}{2} =$

3] $3\dfrac{1}{4} - 2\dfrac{5}{7} =$

4] $\quad 5 - 2\dfrac{7}{8} =$

5] $\quad \dfrac{4}{15} x \dfrac{5}{12} =$

Reduce the fractions

6] $\quad \dfrac{3}{16} + \dfrac{8}{12} =$

Convert these fractions into ones with the same denominator

7] $\dfrac{4}{15} \div \dfrac{2}{5} =$

8]   15 samosas are needed for a party. Each samosa will contain 2 ½ ounces of ground chicken. How much ground chicken will be needed?

9]   5 ½ cupcakes are available for three hungry kids. Divided evenly, how much will each kid get?

10]   The ages of students in a math class are: 21, 23, 19, and 21. What is the average age of these students?

Section C – Decimal Fractions

1] $20.6 + 3.04 + 2.1 + 0.9 =$

2] $3.8 - 1\dfrac{2}{5} =$

3] $34.6 \times 100 =$

4] $24.2 \times 3.03 =$

5] $3 \div 8 =$

6] $.23 \overline{)4669}$

7]   A designer needs to edge 4 garments with gold trim. The 4 items of clothing will need 0.4 metres, 2.3 metres, 1.25 metres and 0.09 metres of this gold trim. How many metres of trim are needed altogether?

8]   The manager of the track team wants to average the team's running times in the 100 metre event. The times are: 12.024 sec., 11.976 sec., 11.8 sec., and 12.128. What is the average time to the nearest hundredth?

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ANSWER KEY

Section A Whole Numbers	Section B Common Fractions	Section C Decimal Fractions

Section A
Whole Numbers

1. 15

2. 1703

3. 2384

4. 13

5. 3809

6. 1968

7. 54

8. 93782

9. 7956

10. 1 r2

11. 7 r4

12. 153

13. 154 cm long

14. 143.74

15. 9 months

16. 36 boxes

Section B
Common Fractions

1. $\frac{4}{8} = \frac{1}{2}$

2. $2\frac{8}{6} \rightarrow 3\frac{2}{6} \rightarrow 3\frac{1}{3}$

3. $\frac{15}{28}$
    the common denominator is 28

4. $2\frac{1}{8}$

5. $\frac{1}{9}$

6. $\frac{41}{48}$
    the common denominator is 48

7. $\frac{2}{3}$

8. $37\frac{1}{2}\,ounces$

9. $1\frac{5}{6}\,cupcakes$

10. 21

Section C
Decimal Fractions

1. 26.64

2. 2.4

3. 3460.0

4. 73.326

5. 0.375

6. 20300

7. 4.04 metres

8. 11.98 seconds

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MATU Arithmetic Placement

The following problems are similar to those on the MATU Arithmetic Assessment. You can use these problems and solutions to practice and prepare for this.

Section A – Whole Numbers

Adding, you may need to carry the 'ten' over to the next place value and add it into the next column if the numbers add up to more than 9.
Subtracting, you may need to borrow from the column to the left to make a number large enough to subtract.

1]
$$\begin{array}{r} 8 \\ +\ 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +7 \\ \hline 15 \end{array}$$

2]
$$\begin{array}{r} 1637 \\ +\ \ 66 \\ \hline \end{array}$$

$$\begin{array}{r} 1\overset{1}{6}3\overset{1}{7} \\ +\ \ \ 66 \\ \hline 1703 \end{array}$$

3]
$$\begin{array}{r} 3047 \\ -\ 663 \\ \hline \end{array}$$

$$\begin{array}{r} 3\overset{2}{0}\overset{9}{4}\overset{1}{7} \\ -\ \ 663 \\ \hline 2384 \end{array}$$

4]
$$\begin{array}{r} 16 \\ -\ \ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ -\ \ 3 \\ \hline 13 \end{array}$$

5]
$$\begin{array}{r} 3867 \\ -\ \ 58 \\ \hline \end{array}$$

$$\begin{array}{r} 38\overset{5}{6}7 \\ -\ \ \ 58 \\ \hline 3809 \end{array}$$

6]
$$\begin{array}{r} 2004 \\ -\ \ 36 \\ \hline \end{array}$$

$$\begin{array}{r} \overset{1}{2}\overset{9}{0}\overset{9}{0}\overset{1}{4} \\ -\ \ \ \ 36 \\ \hline 1968 \end{array}$$

7]
$$\begin{array}{r} 9 \\ \times\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 6 \\ \hline 54 \end{array}$$

8]
$$\begin{array}{r} 3607 \\ \times\ 26 \\ \hline \end{array}$$

$$\begin{array}{r} 3607 \\ \times\ \ 26 \\ \hline 21642 \\ 7214\ \ \\ \hline 93782\ \end{array}$$

9]   306
     x 26

$$
\begin{array}{r}
306 \\
\times\ 26 \\
\hline
1836 \\
612 \\
\hline
7956
\end{array}
$$

10]   6 ÷ 4 =

$$
\begin{array}{r}
1\ r2 \\
4\overline{)6} \\
4 \\
\hline
2
\end{array}
$$

11]   7)53

$$
\begin{array}{r}
7\ r4 \\
7\overline{)53} \\
49 \\
\hline
4
\end{array}
$$

12]   23)3519

$$
\begin{array}{r}
153 \\
23\overline{)3519} \\
23 \\
\hline
121 \\
115 \\
\hline
69 \\
69 \\
\hline
0
\end{array}
$$

13]   To cut one shelf 24 centimetres long and two shelves 65 centimetres long from a single board, how long must the board be?

$$
\begin{array}{r}
65\ cm \\
65\ cm \\
+24\ cm \\
\hline
154\ cm\ long
\end{array}
$$

14]   A couch costs $927. $783.26 has been saved so far. How much more is needed?

$$
\begin{array}{r}
\$927.00 \\
-783.26 \\
\hline
\$143.74
\end{array}
$$

15]   A family can save $75 each month to buy a new TV which costs $675. How many months will it take before they can buy the TV?

$$
\begin{array}{r}
9\ months \\
75\overline{)675} \\
675 \\
\hline
0
\end{array}
$$

16] In the warehouse, 432 containers of yogurt have been delivered. 12 containers can go in each box. How many boxes are needed for today's order?

$$\begin{array}{r} 36 \text{ boxes} \\ 12\overline{)432} \\ 36\downarrow \\ \hline 72 \\ 72 \\ \hline 0 \end{array}$$

Section B – Common Fractions

To add or subtract fractions, you must convert all the fractions so that they have a common denominator. In the fraction $\frac{3}{4}$, three is the numerator and four is the denominator.

1] $\frac{1}{8}+\frac{3}{8}=$

$$\begin{array}{r} \frac{1}{8} \\ +\frac{3}{8} \\ \hline \frac{4}{8}=\frac{1}{2} \end{array}$$

Add the tops (numerators), then reduce to lowest terms.

2] $\frac{5}{6}+2\frac{1}{2}=$

$$\frac{5}{6} \implies \frac{5}{6}$$
$$+2\frac{1}{2} \qquad +2\frac{3}{6}$$
$$\overline{} \qquad 2\frac{8}{6} \to 3\frac{2}{6} \to 3\frac{1}{3}$$

You need to get a common denominator : 6
6, 12
2, 4, 6, 8

3] $3\frac{1}{4}-2\frac{5}{7}=$

$$3\frac{1}{4} \implies 3\frac{7}{28} \implies 2\frac{35}{28}$$
$$-2\frac{5}{7} \qquad -2\frac{20}{28} \qquad -2\frac{20}{28}$$
$$\overline{} \qquad \overline{} \qquad \overline{\frac{15}{28}}$$

Here the common denominator is 28.

4] $5 - 2\frac{7}{8} =$

$$\begin{array}{r} 5 \\ -2\frac{7}{8} \end{array} \Rightarrow \begin{array}{r} 4\frac{8}{8} \\ -2\frac{7}{8} \\ \hline 2\frac{1}{8} \end{array}$$

*Borrow a whole number to make a 'subtractable' fraction above $\frac{7}{8}$.

The common denominator here is 8.

5] $\frac{4}{15} \times \frac{5}{12} =$

$$\frac{\cancel{4}^{1}}{\cancel{15}_{3}} \times \frac{\cancel{5}^{1}}{\cancel{12}_{3}} = \frac{1}{9}$$

*Divide 5 and 15 by 5, divide 4 and 12 by 4 to cancel.

Reduce the fractions first by canceling, then multiply across.

6] $\frac{3}{16} + \frac{8}{12} =$

$$\begin{array}{l} \frac{3}{16} \times \frac{3}{3} = \frac{9}{48} \\ + \frac{8}{12} \times \frac{4}{4} = \frac{32}{48} \\ \hline \frac{41}{48} \end{array}$$

12, 24, 36, 48
16, 32, 48, 60

The common denominator is 48

To convert these fractions into ones with the same denominator (bottom), you must find a new common denominator which all the denominators will divide equally into.

7] $\frac{4}{15} \div \frac{2}{5} = \frac{4}{15} \div \frac{2}{5} \rightarrow \frac{\cancel{4}^{2}}{\cancel{15}_{3}} \times \frac{\cancel{5}^{1}}{\cancel{2}_{1}} = \frac{2}{3}$

You can't divide by a fraction, so instead you must multiply by the reciprocal. $\frac{2}{5}$ becomes $\frac{5}{2}$. Then multiply after canceling.

8] 15 samosas are needed for a party. Each samosa will contain 2 ½ ounces of ground chicken. How much ground chicken will be needed?

$15 \times 2\frac{1}{2} \rightarrow \frac{15}{1} \times \frac{5}{2} = \frac{75}{2} = 37\frac{1}{2}$ ounces

9] 5 ½ cupcakes are available for three hungry kids. Divided evenly, how much will each kid get?

$5\frac{1}{2} \div 3 \rightarrow \frac{11}{2} \div \frac{3}{1} \rightarrow \frac{11}{2} \times \frac{1}{3} \rightarrow \frac{11}{6} \rightarrow 1\frac{5}{6}$

Each kid will get $1\frac{5}{6}$ cupcakes.

10] The ages of students in a math class are: 21, 23, 19, and 21. What is the average age of these students?

$$\begin{array}{r} 21 \\ 23 \\ 19 \\ + 21 \\ \hline 84 \end{array}$$

$\begin{array}{r} 21 \\ 4\overline{)84} \end{array}$

Average age is 21.

To average, add up the items and divide the total by the number of items.

Section C – Decimal Fractions

To add or subtract decimal numbers, always line up the decimal numbers so that the decimal points are in a vertical line. You can fill in zeros for open spaces.

1]   20.6 + 3.04 + 2.1 + 0.9 =

$$\begin{array}{r} 20.6 \\ 3.04 \\ 2.1 \\ + \; 0.9 \\ \hline \end{array} \Rightarrow \begin{array}{r} 20.60 \\ 3.04 \\ 2.10 \\ + \; 0.90 \\ \hline 26.64 \end{array}$$

2] $3.8 - 1\frac{2}{5} =$

$$\begin{array}{r} 0.4 \\ 5\overline{)2.0} \end{array} \qquad \begin{array}{r} 3.8 \\ -1.4 \\ \hline 2.4 \end{array}$$
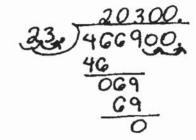
To convert a fraction to a decimal number, divide the numerator (top) by the denominator (bottom). Ex.: $\frac{2}{5}$ can always mean 2 divided by 5.

3]   34.6 x 100 =

34.6 x 100 moves the decimal point two places to the right

34.60. = 3460.0

4]   24.2 x 3.03 =

$$\begin{array}{r} \overset{1}{2}4.2 \\ \times 3.03 \\ \hline 726 \\ 7260 \\ \hline 73.326 \end{array}$$

To multiply decimal numbers, just multiply the ordinary way. Count the number of decimal places in both multiplied numbers. Ex.: Question 4 has three decimal places, one in the first number and two in the second so the answer has to have three decimal places behind the decimal point.

5] $3 \div 8 = 0.375$

$$
\begin{array}{r}
0.375 \\
8\overline{)3.000} \\
24 \\
\hline
60 \\
56 \\
\hline
40 \\
40 \\
\end{array}
$$

Every whole number can have a decimal point to its right, as in 3.0. Supply the decimal point, add zeros and divide.

6] $.23\overline{)4669}$

$$
\begin{array}{r}
20300. \\
23\overline{)466900.} \\
46 \\
\hline
069 \\
69 \\
\hline
0 \\
\end{array}
$$

You can't divide by a decimal number. You must change the decimal number (.23) to a whole number by moving the decimal point to the right. Now move the decimal in the divided number (even if there wasn't one) the same number of spaces (4669 becomes 466900).

7] A designer needs to edge 4 garments with gold trim. The 4 items of clothing will need 0.4 metres, 2.3 metres, 1.25 metres and 0.09 metres of this gold trim. How many metres of trim are needed altogether?

$$
\begin{array}{r}
0.40 \\
2.30 \\
1.25 \\
+\ 0.09 \\
\hline
4.04 \text{ metres}
\end{array}
$$

8] The manager of the track team wants to average the team's running times in the 100 metre event. The times are: 12.024 sec., 11.976 sec., 11.8 sec., and 12.128. What is the average time to the nearest hundredth?

$$
\begin{array}{r}
12.024 \\
11.976 \\
11.800 \\
12.128 \\
\hline
47.928
\end{array}
$$

$$
\begin{array}{r}
11.982 \\
4\overline{)47.928} \\
4 \\
\hline
39 \\
36 \\
\hline
32 \\
32 \\
\hline
08 \\
\end{array}
$$

Answer
11.98 sec