Cryptarithmetic

A mathematical puzzle-Digits replaced by alphabets

Learning Objectives

❖ Word Addition

❖ Verbal Arithmetic

❖ Problem Solving Skill

Cryptarithmetic: Rules

❖ Each letter represents only one digit through out the question and is unique.

❖ Starting letter value cannot be zero.

❖ The question will have one and only one solution.

❖ Apply the basic principles of arithmetic operations.

❖ After decrypt, finally verify the result.

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Cryptarithmetic: Tips

1. The max carry is 1 for 2 single digit sum,

   2 for 3 single digit sum & so on.

2. If A +

   $$\frac{B}{A}$$

B = 0 (no carry)

B = 9 (As 1 carry from the previous step)

Cryptarithmetic: Tips

3. A ×

   A

  _A

A= 5 or 6.

4. A ×

   B

  _A   then possible values of A and B,

     A = 5 and B = 3, 7, 9.

     A = 2, 4, 8 and B = 6.

Problem 1

$$\begin{array}{r} T\,O\,+ \\ G\,O \\ \hline O\,U\,T \end{array}$$

Ans: 21+81=102

Problem 2

Find t*e + i*r*h - s.

THIS +
IS
_____
HERE
_____

A. 221
B. 178
C. 157
D. 149

Option C

Problem 3

Find (A+B)C ?

$$
\begin{array}{r}
A\,A\,+ \\
B\,B \\
C\,C \\
\hline
A\,B\,C \\
\hline
\end{array}
$$

Ans: 80

Problem 4

Find the sum of the vowels?

$$U\,S\,A\,+$$
$$U\,S\,S\,R$$
$$\overline{P\,E\,A\,C\,E}$$

Ans: 22

Problem 5

Decrypt MONEY ?

Henry Ernest Dudeney-1924

$$
\begin{array}{r}
\text{S E N D +} \\
\text{M O R E} \\
\hline
\text{M O N E Y}
\end{array}
$$

Ans: 10652

Problem 6

Decrypt EUROPA.

```
  S A T U R N  +
    T I  T AN  +
    T R I  T O N
  ─────────────
  E U R O P A
  ─────────────
```

A. 948563
B. 984556
C. 948458
D. 984521

Option D

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Problem 7

DECRYPT TYSOL.

```
    A S K
  X   T O
  ---------
  K A R L
O S A K
  ---------
T Y S O L
  ---------
```

A. 74860
B. 74682
C. 74398
D. 74895

Option A

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Problem 8

```
    A  P  D
 ×  A  D
─────────────
    R  P  A  D
 D  D  C  D
─────────────
 D  P  C  E  D
─────────────
```

Find the value of A.
A. 5
B. 6
C. 7
D. 9

Find the value of R + P + A + D.
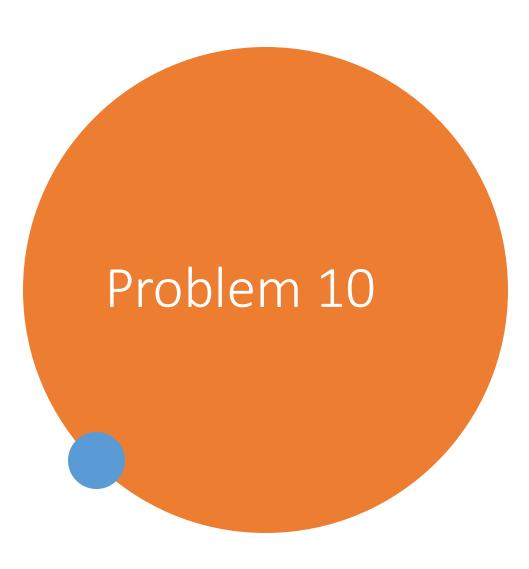A. 20
B. 21
C. 23
D. 24

Option C & D

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Problem 9

Find NET - KEY.

A. 301
B. 152
C. 354
D. 453

Option A

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Problem 10

Find U + S + E + R + S.

$$\begin{array}{r}
R\ B \\
R\ O\ B\ \overline{)\ U\ S\ E\ R\ S} \\
B\ R\ S\ R \\
\hline
O\ R\ D\ S \\
O\ T\ C\ B \\
\hline
B\ B\ R \\
\hline
\end{array}$$

A. 25

B. 31

C. 18

D. 24

Option A

Thank you
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