Year 7 Mathematics 2012

Problem Solving Test

Total marks: 31　　　　　　　　　　Name___*Answers*___

Show your working for any question worth more than one mark.

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1. Work out the following two numbers:

   Which two numbers have a difference of 2 and a product of 48?　　___6___　___8___ ✓ [1]
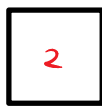
   Which two numbers sum to give 14 and multiply to give 45?　　___9___　___5___ ✓ [1]

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2. In the question below, the circle, triangle and square represent a different number. Use the clues below to determine what number each shape represents.

   $\triangle_{5}$ + $\triangle_{5}$ = 10　　　$\bigcirc_{3}$ × $\triangle_{5}$ = 15

   $\triangle_{5}$ − $\square_{2}$ = $\bigcirc_{3}$

   Answer: Circle = ___3___ ✓ Triangle = ___5___ ✓ Square = ___2___ ✓ [3]

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3. What are all the odd 4-digit numbers you can make using the digits, 4, 5, 6, and 8 if you do not repeat a digit in a number? [2]
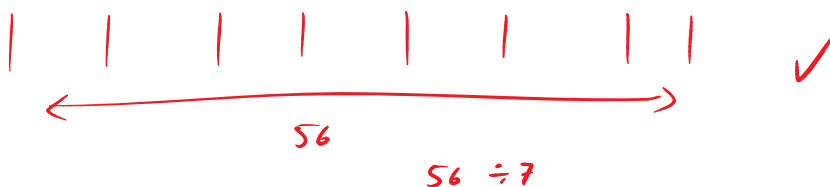
   4685　　　4865　　　8645　　　8465

   6845　　　6485

   (extra answers lose a mark)
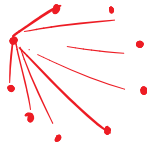
   ✓ for four correct　　　✓✓ all six

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4. Mike uses 8 posts to build a fence covering 56 metres. How far apart are each post?

   ✓

   56

   56 ÷ 7

   Answer(4) ___8m___ [2]

   ⑨

5. The Taylor family has 9 children. How many different pairs of children are possible?

$8 + 7 + 6 + 5 + 4 + 3 + 2 + 1$ ✓

Answer(5) ___36___ ✓ [2]

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6. Tamika steps into the lift on the second floor. She goes up 12 floors, down 5 floors, up 9 floors and down 3 floors. Then she steps out of the lift. Onto what floor does she step out?

$2 + 12 - 5 + 9 - 3$ ✓ or picture

Answer(5) ___15th___ ✓ [2]

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7. Stuart owns a small farm with sheep and chickens. One day he counts his animals and finds that there are 9 heads in total and 24 legs in total. How many sheep does he own?

✓ for any trial

3 sheep + 6 chickens = 9
12 legs + 12 legs = 24
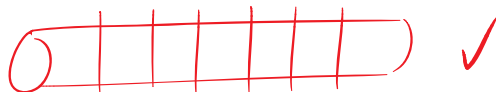
Answer(7) ___3 sheep___ ✓ [2]

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8. In the town hall meeting room, I sit in the fourth row from the front, which is also the twelfth row from the back. Each row has 14 seats. How many people can be seated in the meeting room?
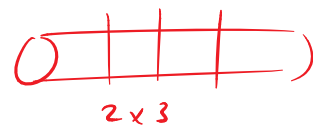
15 =
14 =
13 =
12 ✗

15×14 ✓

Answer(8) ___210___ ✓ [2]

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9. Bruce is a professional woodcutter. He is able to cut one log into 7 pieces in 12 minutes. How long would it take him to cut one log into 4 pieces?

✓   2 × 3

$12 \div 6 = 2$ min / cut

Answer(9) ___6 minutes___ ✓ [2]

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⑩

10. Today Flo has 25 pens. Yesterday she bought 9 pens and gave 3 to her friend Amy. The day before, she divided all of her pens equally among 3 friends and herself. How many pens did Flo start with?

$25 - 9 + 3 = 19$ ✓

$19 \times 4 = 76$ ✓

✓ for ×4

[3]

11. Nicole is twice as old as Bradley. Jennifer is 5 years older than Bradley. The sum of their ages is 41. How old are the 3 children?

✓ if 3 numbers add to 41

✓ if Nicole is twice Bradley or Jen 5 years older than Brad   ✓

Answer(11) Bradley: 9   Jennifer: 14   Nicole: 18   [3]

12. Use the following clues to find five different numbers

CLUES
a. The sum of the five numbers is 91
b. The last number is triple the first number
c. The last 3 numbers are consecutive*
d. Only one number is odd
e. The third number is the sum of the first two numbers

✓ if fulfills 2 criteria
✓✓ if fulfills 3 criteria

What are the numbers?

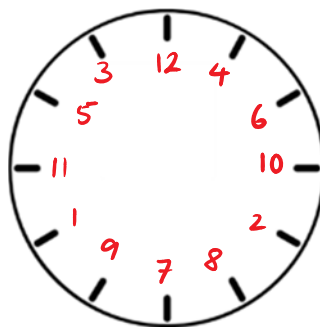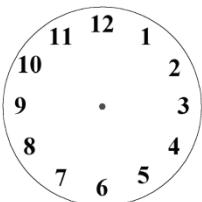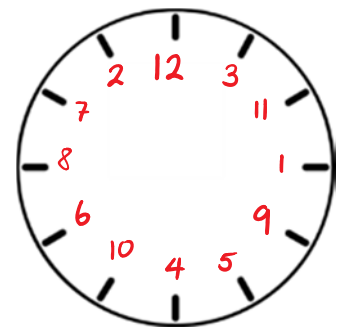odd   multiple of 3
↓   ↓

Answer(12) 8   14   22   23   24   [3]

*Consecutive – following one after the other in order eg. 7, 8, 9 are consecutive   ✓✓✓

13. Rearrange the numbers on the clock's face so that all the sums of pairs of adjacent numbers (numbers which are next to each other) will be composite numbers between 7 and 17.   [3]

Working

Final answer

✓ for any decent working

✓✓ for only one mistake

✓✓✓ all correct

Other answers may be possible