IAVM

Sample IVMO Primary
Time allowed - 1 hour

1. Add,

$$\begin{array}{r} 28 \\ 47 \\ 13 \\ 72 \\ +\ 51 \\ \hline \end{array}$$

2. Draw a ring around the number below that is divisible by 9.

511765

763521

420673

485316

453688

3. Subtract

$$\begin{array}{r} 65748 \\ -\,26853 \\ \hline \end{array}$$

4.

$$\begin{array}{r} 96 \\ \times 91 \\ \hline \end{array}$$

5.

$$\begin{array}{r} 107 \\ \times 112 \\ \hline \end{array}$$

6. What is the digital root of 64728951?

7. 16.4×5

8. $720 \div 5$

9. 65^2

10. 33×37

11. Divide

$$9\overline{)13021}$$

12. Divide,

$$11\overline{)47539}$$

13. What is the Highest Common Factor of 24 and 30?

14. What is the Lowest Common Multiple of 24 and 30?

15. Divide,

$$97\overline{)12313}$$

16. Divide,

$$112\overline{)2576}$$

17. $\frac{2}{5} + \frac{3}{8}$

18. $\frac{9}{16} - \frac{3}{8}$

19. $\frac{5}{8} \times \frac{4}{25}$

20. Janaka has 1000 cows and one day he counts 768 because some are missing. How many are missing?

21. A scientist counts all the legs of the spiders in a large collection and comes to a total of 33,986. If each spider has 8 legs, could the scientist have been correct?

22. What are the next two numbers in this sequence?

21 23 28 36 47

23. If you learn 16 verses of scripture per day for each of 125 days, how many verses will you have learnt?

24. A train travels 36 km in 1hr 24 minutes. How long does it take to travel 45 km at the same speed?

25. A farmer sells 237 trays of eggs. Each tray has 144 eggs. How many eggs does he sell?

26. Find the area of a rectangular sheet of paper measuring 8.2 cm by 19.3 cm.

27. Old Mother Hubbard had in her cupboard a giant bar of chocolate. She gave each of her children one twelfth of the chocolate. One third of the bar was left. How many children does she have?

28. Which fraction is closest to 1?

$$\frac{12}{23} \quad \frac{23}{34} \quad \frac{34}{45} \quad \frac{45}{56} \quad \frac{56}{67}$$

29. 108 farm workers each work for 10.5 hours per day. How many hours is this in total?

30. What is 50% of \$13.80 plus 13.8% of \$50?

31. In furnishing a new hotel 438 beds are needed, each costing $632. What is the total cost of all the beds?

32. 40 years ago the number of lions in Africa was estimated to be 250,000. The number has decreased by 90%. What is the current estimate for the number of lions in Africa?

33. A seagull flew 16,500 miles from Australia to Finland. It flew at a rate of 125 miles each day. How many days did it take?

34. I fold an equilateral triangle so that one corner touches the middle of the opposite edge. What is the ratio of the perimeter of the triangle to the perimeter of the resulting trapezium?

35. $\dfrac{66+77+88+99}{11+22+33+44}$

36. Sunita plants two seeds in every square centimetre of her field. Her field has an area of 50 m^2. How many seeds does she plant?

37. I multiply a whole number by 3. Which of the following could be my answer? (Draw a circle round the correct answer)

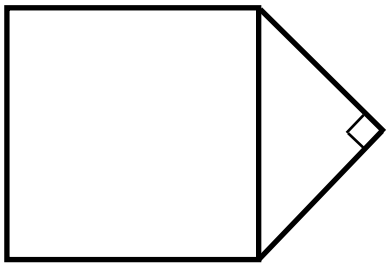
A 3265 B 3256 C 3247 D 3243 E 3269

38. Selena wondered if when you add two multiples of 4, you **always** get a multiple of 8. Which of the following sums shows this idea is wrong?

A $302+302$ *B* $843+727$ *C* $316+236$ *D* $348+424$ *E* $408+408$

39. A squirrel gathers 100 nuts and then she eats some of them. She finds that of the nuts she has left she can divide them into piles of 2 or piles of 3 or piles of 5 and each time there is one nut left over. If she divides them into piles of 7, there are no nuts left over.
How many nuts did she eat?

40. In the diagram, a right-angled isosceles triangle is joined to one side of a square. The square has a perimeter of 40 cm. What is the area of the triangle in cm^2?



41. A bottle contains 750 ml of water. Ravi and Harinder share all the water. Ravi drinks 50% more than Havinder. How much does Ravi drink?

42. Bianca writes down three two-digit numbers using the digits 3, 4, 5, 6, 7 and 8 once each. One of her numbers is square, one is triangular and one is a prime number.
What is the prime number she writes?

43. A rectangle is three times as long as it is high. The area of a square is twelve times the area of the rectangle. What is the ratio of the perimeter of the square to the perimeter of the rectangle?

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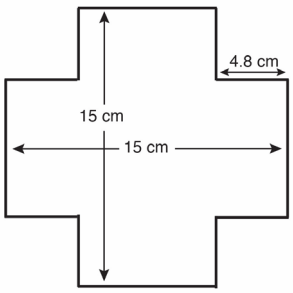
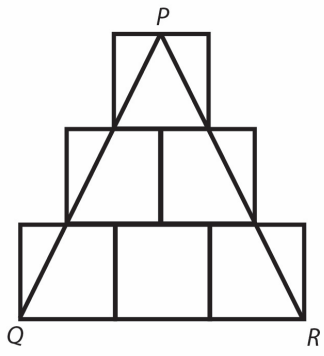


45. Each square has a side length of 3.2 cm.
What is the area of triangle *PQR*?

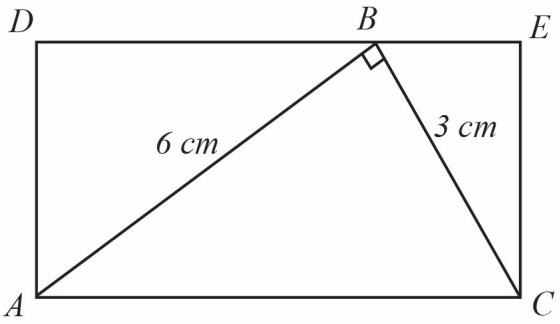


46. How many digits are there to the correct answer to,

$$347347347347 \div 347$$

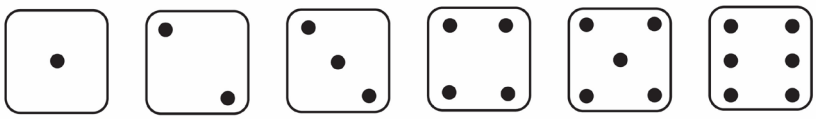
47. A ball is dropped onto a hard surface. Each time it bounces and rebounds to a height of exactly two-thirds of the height from which it fell. After the third bounce the ball rises to a height of 12 cm. From what height was it originally bounced?

48.

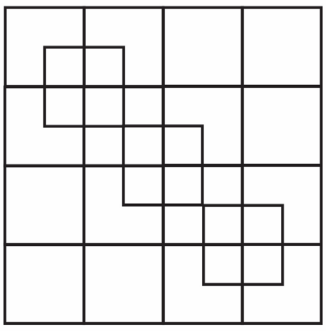


Right-angled triangle, *ABC*, has *AB* = 6cm and *BC* = 3cm. This triangle sits inside rectangle *ADEC* as shown.
What is the area of the rectangle?

49. How many of the six faces of the dice shown below have fewer than three lines of symmetry?



50. How many squares are there?



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Time allowed - 1 hour

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$$\begin{array}{r} 28 \\ 47 \\ 13 \\ 72 \\ +\ 51 \\ \hline 211 \end{array}$$

2. Draw a ring around the number below that is divisible by 9.

511765

763521

420673

485316

453688

By elimination and retention

3. Subtract

$$\begin{array}{r} 65748 \\ -26853 \\ \hline 38895 \end{array}$$

4.

$$\begin{array}{r} 96-04 \\ \times\ 91-09 \\ \hline 87\quad 36 \end{array}$$

All from 9 and the last from 10

5.

$$\begin{array}{r} 107+07 \\ \times\ 112+12 \\ \hline 119\quad 84 \end{array}$$

All from 9 and the last from 10

6. What is the digital root of 64728951?

$6\not{4}\not{7}\not{2}\not{8}\not{9}\not{5}\not{1}$

$DR = 6$

By elimination and retention

7. 16.4×5 82

Proportionately

8. $720 \div 5$ 144

Proportionately

9. 65^2 4225

By one more than the one before

10. 33×37 1221

By one more than the one before

When the final digits add to 10

11. Divide

$9\overline{)13021}$

1446 / 7

All from 9 and the last from 10

12. Divide,

$11\overline{)47539}$

4321 / 8

Transpose and apply

13. What is the Highest Common Factor of 24 and 30?

$$6 \mid 24 \quad 30$$
$$4 \quad 5$$

$$HCF = 6$$

Vertically and crosswise

14. What is the Lowest Common Multiple of 24 and 30?

$$6 \mid 24 \quad 30$$
$$4 \quad 5$$

$$LCM = 120$$

Vertically and crosswise

15. Divide,

$$\begin{array}{l|l} 97 & 123/13 \\ 03 & 03 \\ & 06 \\ & 18 \\ \hline & 126/91 \end{array}$$

All from 9 and the last from 10

16. Divide,

$$\begin{array}{l|l} 112 & 25/76 \\ \overline{1}\,\overline{2} & \overline{2}\ \overline{4} \\ & \overline{3}\,\overline{6} \\ & 18 \\ \hline & 23/00 \end{array}$$

Transpose and apply

17. $\frac{2}{5} + \frac{3}{8}$ $\quad \frac{16+15}{40} = \frac{31}{40}$

Vertically and crosswise

18. $\frac{9}{16} - \frac{3}{8}$ $\quad \frac{9-6}{16} = \frac{3}{16}$

Proportionately

19. $\frac{5}{8} \times \frac{4}{25}$ $\quad \frac{1}{10}$

Proportionately

20. Janaka has 1000 cows and one day he counts 768 because some are missing. How many are missing?

232

All from 9 and the last from 10

21. A scientist counts all the legs of the spiders in a large collection and comes to a total of 33,986. If each spider has 8 legs, could the scientist have been correct?

$1000 - 986 = 14$, No!

All from 9 and the last from 10

Only the last digits

22. What are the next two numbers in this sequence?

21 23 28 36 47

21 23 28 36 47 61 78

2 5 8 11 14 17

3 3 3 3 3

By one more than the one before

23. If you learn 16 verses of scripture per day for each of 125 days, how many verses will you have learnt?

2000

Proportionately

24. A train travels 36 km in 1hr 24 minutes. How long does it take to travel 45 km at the same speed?

1hr 45min

Proportionately

25. A farmer sells 237 trays of eggs. Each tray has 144 eggs. How many eggs does he sell?

$$\begin{array}{r} 237 \\ \times\ 144 \\ \hline 3_{1}4_{3}1_{4}2_{2}8 \end{array}$$

Vertically and crosswise

26. Find the area of a rectangular sheet of paper measuring 8.2 cm by 19.3 cm.

$$\begin{array}{r} 19.3 \\ \times\ \ 8.2 \\ \hline 15_{7}8._{4}26\ \text{cm}^2 \end{array}$$

Vertically and crosswise

27. Old Mother Hubbard had in her cupboard a giant bar of chocolate. She gave each of her children one twelfth of the chocolate. One third of the bar was left. How many children does she have?

$1-\frac{4}{12}=\frac{8}{12}$, 8 children

Transpose and apply

28. Which fraction is closest to 1?

$$\frac{12}{23}\quad\frac{23}{34}\quad\frac{34}{45}\quad\frac{45}{56}\quad\frac{56}{67}$$

$\frac{56}{67}$ By inspection

29. 108 farm workers each work for 10.5 hours per day. How many hours is this in total?

$$\begin{array}{r} 108+08 \\ \times\ 105+05 \\ \hline 1134.0 \end{array}$$

All from 9 and the last from 10

30. What is 50% of \$13.80 plus 13.8% of \$50?

\$13.80

Transpose and apply

31. In furnishing a new hotel 438 beds are needed, each costing \$632. What is the total cost of all the beds?

$$\begin{array}{r} 438 \\ \times\ 632 \\ \hline 27_{3}6_{6}8_{3}1_{1}6 \end{array}$$

Vertically and crosswise

32. 40 years ago the number of lions in Africa was estimated to be 250,000. The number has decreased by 90%. What is the current estimate for the number of lions in Africa?

10% = 25,000

By the Deficiency

33. A seagull flew 16,500 miles from Australia to Finland. It flew at a rate of 125 miles each day. How many days did it take?

$125 \times 8 = 1000$

$8 \times 16 + 4 = 132$ days

Proportionately

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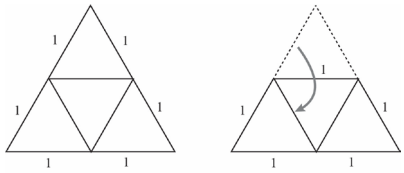

6 : 5

Transpose and apply

35. $\dfrac{66+77+88+99}{11+22+33+44}$

$\dfrac{6+7+8+9}{1+2+3+4} = \dfrac{30}{10} = 3$

Proportionately

By inspection

36. Sunita plants two seeds in every square centimetre of her field. Her field has an area of 50 m^2. How many seeds does she plant?

$1\ m^2 = 100 \times 100 = 10000\ cm^2$

$50\ m^2 = 500000\ cm^2$

$2 \times 500000 = 1{,}000{,}000$

Proportionately

37. I multiply a whole number by 3. Which of the following could be my answer? (Draw a circle round the correct answer)

A 3265 B 3256 C 3247 D 3243 E 3269

By Addition

38. Selena wondered if when you add two multiples of 4, you **always** get a multiple of 8. Which of the following sums shows this idea is wrong?

A $302+302$ *B* $843+727$ *C* $316+236$ *D* $348+424$ *E* $408+408$

By Addition

By the last digits

39. A squirrel gathers 100 nuts and then she eats some of them. She finds that of the nuts she has left she can divide them into piles of 2 or piles of 3 or piles of 5 and each time there is one nut left over. If she divides them into piles of 7, there are no nuts left over.
How many nuts did she eat?

Common multiples of 2, 3 and 5 are 30, 60, 90

Remainders of 1 require 31, 61 or 91

91 is divisible by 7, so 9 nuts were eaten.

All the multipliers

Remainders by the last digit

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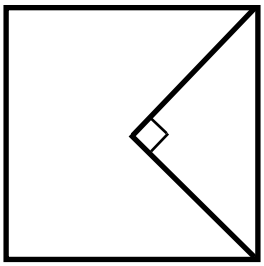


Area of square is 100

Triangle is $\frac{1}{4}$ of this, $= 25$

Transpose and apply

41. A bottle contains 750 ml of water. Ravi and Harinder share all the water. Ravi drinks 50% more than Havinder. How much does Ravi drink?

450 ml Proportionately

42. Bianca writes down three two-digit numbers using the digits 3, 4, 5, 6, 7 and 8 once each. One of her numbers is square, one is triangular and one is a prime number.
What is the prime number she writes?

53 By elimination and retention

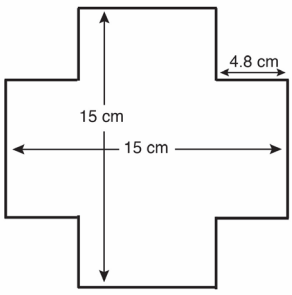
43. A rectangle is three times as long as it is high. The area of a square is twelve times the area of the rectangle. What is the ratio of the perimeter of the square to the perimeter of the rectangle?

3 : 1 Proportionately

44. Work out the perimeter of this cross.

$4 \times 15 = 60$ cm

Transpose and apply



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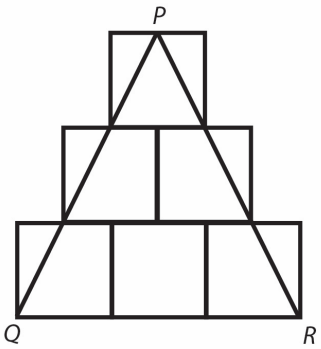

$$96-04$$
$$\times\ 96-04$$
$$2)92.16$$
$$46.08\ \text{cm}^2$$

All from 9 and the last from 10

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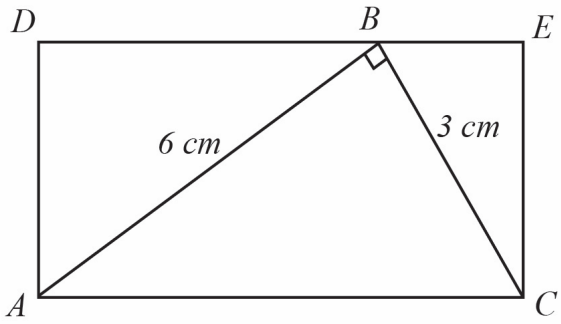
$$347347347347 \div 347$$

10 By inspection

47. A ball is dropped onto a hard surface. Each time it bounces and rebounds to a height of exactly two-thirds of the height from which it fell. After the third bounce the ball rises to a height of 12 cm. From what height was it originally bounced?

$12 \times \frac{3}{2} \times \frac{3}{2} \times \frac{3}{2} = 40.5\ \text{cm}$ Transpose and apply

48.



Right-angled triangle, *ABC*, has *AB* = 6cm and *BC* = 3cm. This triangle sits inside rectangle *ADEC* as shown.
What is the area of the rectangle?

$18\ \text{cm}^2$

By inspection

Transpose and apply

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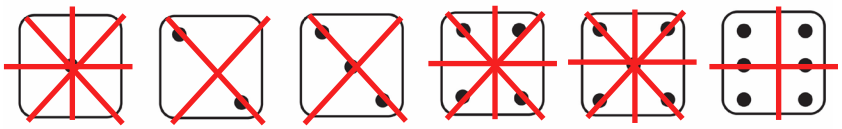
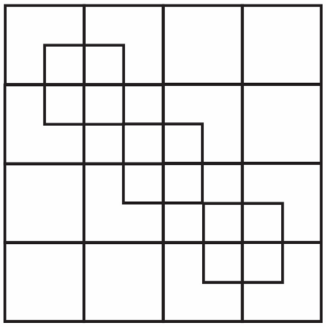


3

By inspection

50. How many squares are there?



51

By elimination and retention