

MATHSWELL 2017 Y9 PROBLEM SOLVING

Question 1

A Cadbury truck fully laden is 2964 kg. After dropping off half of its load of chocolate it weighs 2712 kg. What was the total weight of the chocolate in the truck?

Question 2

Carson is attending a school orchestra concert. He sees his maths teacher seated fifteen metres ahead of him and his science teacher seated eight metres to his right. How far apart are the two teachers?

Question 3

The product of three brothers' ages is 175. Two are twins. How old is the other one? (You may assume all ages are integers)

Question 4

A school bus travels from the railway station to QMC. There are four children in the bus. Each child has a backpack. There are four teddy bears sitting in each backpack. All these teddy bears have four legs, with four toes on each leg. How many toes are on the bus?

Question 5

In a fishing contest I saw a salmon hanging that had just been weighed. I asked the fisherman "How much does it weigh?" He replied curiously, "It weighs three fifths of its weight, and four fifths of a kilogram." What was the weight of the salmon?

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Question 6

What is the smallest positive integer whose digits sum to twenty?

Question 7

A stock dam has three pipes to fill it with water. Pipe A can fill the dam in twelve hours by itself; pipe B can fill the dam in six hours by itself; and pipe C can fill the dam in four hours by itself. If all three pipes are filling the dam, how long will it take to fill?

Question 8

What is the next number in the sequence: 1, 16, 81, 256, ____?

Question 9

I have three times as many cows as I have hens, and twice as many hens as dogs. If all together they have 96 legs, how many cows do I have?

Question 10

A kite has diagonals of 40 cm and 12 cm. Calculate its area.

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Question 11

One computer is infected by a virus. Each time the virus multiplies, every infected computer infects ten more. How many times must the virus multiply for at least ten million computers to be infected?

Question 12

A set of football matches is to be organised in a “round-robin” fashion, i.e. every participating team plays a match against every other team once. If 105 matches are played in total, how many teams participated?

Question 13

I have a balance scale and an unlimited number of 3 kg, 13 kg and 23 kg weights. What is the largest mass that I cannot weigh accurately?

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Question 14

A line has endpoints $(6, 7)$ and $(6, 3)$. Find the coordinates of its midpoint.

Question 15

Which four consecutive integers sum to -6 ?

Question 16

After twelve cricket matches my batting average is 32. What will I need to score in my next game to raise my average to 35?

Question 17

How many degrees are there between NW and SSE on a compass?

Question 18

A handball court is twice as long as it is wide. If the area is 800 m, find the perimeter of the handball court.

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Question 19

Twenty five fence posts are required for a fence 72 m long. How many fence posts are needed for a fence 30 m long?

Question 20

A right angled triangle has angles in the ratio 2 : 3 : 5. Find the smallest angle.

Question 21

What number is sixty more than a quarter of itself?

Question 22

If it takes six painters fifteen days to paint a house, how long would it take ten painters?

Question 23

List all the integers less than 100 with exactly three positive factors.

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Question 24

What is the smallest positive number that gives a remainder of one when divided by two, three, four, five, and six?

Question 25

If 125 small cubes are glued together to make a large cube, how many of the original 125 cubes can still be seen?

Question 26

A conservationist studying the effects of rats on an island bird sanctuary needs to estimate the rat population. She captures 50 rats, tags them and lets them go. One week later she captures 100 rats and finds that five of them have been tagged. She is now able to estimate the rat population. What is her estimate?