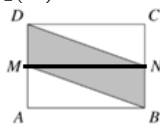


Answer Key

1. $\frac{\frac{1}{3} + \frac{2}{5}}{2} = \frac{11}{30}$

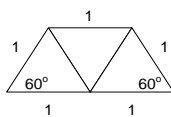
2. $\frac{3}{8} + \frac{1}{16} = \frac{7}{16}$

3. $\frac{1}{2}(10) = 5$



4. Actual time $12:00 + 0:15 = 12:15$
Leo believes $12:00 + 0:15 + 0:15 = 12:30$

5. $(6) \times \frac{0.5}{6+4} = 0.3 \text{ km} = 300 \text{ m}$



6. Ans = 60° & 60°

7. The only even sum arises from even P since Q is even and R is odd.

$\frac{1}{3}$ of even in spinner P, the answer is $\frac{1}{3} = 1/3$

8. 3 tosses result in $2^3 = 8$ outcomes.

Only 3 of them are desired.

HHH, HHT, THH

So, the probability = $\frac{3}{8} = 3/8$

9. Let the total weight be 100 lb.

$25 + 60 = 85$

$100 - 85 = 15$

$25 \div 2 = 12.5$ (the lightest)

$15 > 12.5$

$15 \div 2 = 7.5 < 12.5$

(15 cannot be shared by more than 2)

So, 15 lb must be the weight of one single puppy.

Ans = 6 puppies

10. $20 - 4 + 1 = 17$

11. PQR to be a 4-multiple:

$QR = 12, 24, 32, 52$

$S = 5$

RST to be 3-multiple:

$QRST = 2453$

So, $P = 1$

12. $2 \times 8 = 16$

$9 \times 25 = 225$

No number is between 8 and 9.

So, there are only 4 numbers.

$2 + 8 + 9 + 25 = 44$

13. $63 \div 3 = 21$

$21 + 2 = 23$

14. 7 of them

16, 25, 34, 43, 52, 61, 70

15. D

16. Thursday

	Alice	Bob
Monday	L	T
Tuesday	T	T
Wednesday	L	T
Thursday	L	L
Friday	T	L
Saturday	T	T
Sunday	T	L

L: Lying T: True

17. $5 \div 2 = 2.5$ (times of manpower)

$10 \div 2.5 = 4$ hours

18. $100 \div 2 = 50$

1st:50

2nd:51

3rd:50

4th:51

5th:50

6th:51

7th:50

total = $50 \times 7 + 3 = 353$

19. Let's consider the cubes for all intersections. There are only 3 of them. You can imagine the coordinates as (2, 2, 2), (3, 3, 3), and (4, 4, 4).

To make a 3-D tunnel meeting at one such cube, we have to remove

$3 \times 4 + 1 = 13$ (or $3 \times 5 - 2$) cubes from the stack.

There are 3 such 3-D tunnels, so a total of

$3 \times 13 = 39$ cubes to be removed.

20. $AO = 5 + 4 = 9$

Height = 4.5

$BC = 5 - 2 = 3$

area = $\frac{1}{2}(4.5 \times 3) = \frac{27}{4} = 27/4$

21. a) pear = $\frac{12}{3} \times 8 = 32$ ounces

orange = $\frac{12}{2} \times 8 = 48$ ounces

$32 + 48 = 80$

b) Consider 6 pears and 6 oranges.

$\frac{16}{16+24} = \frac{16}{40} = 40\%$

22. $3 \times 128 \times 0.5 = 192$ ounces

$192 \div 32 = 6$ dozen pears

$192 \div 48 = 4$ dozen oranges

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23. $\frac{\frac{3}{4}}{2 \times \frac{2}{3} + \frac{3}{4}} = \frac{\frac{3}{4} \times 12}{(2 \times \frac{2}{3} + \frac{3}{4}) \times 12} = \frac{9}{16+9} = \frac{9}{25} = \underline{36\%}$
24. 18 correct + 7 omissions + 0 incorrect
19 correct + 3 omissions + 3 incorrect (at most)
25. 900
26. [2-9] [0|2-9] [0|2-9] $8 \times 9 \times 9 = 648$
27. 1 [0|2-9] [0|2-9] $9 \times 9 = 81$
[2-9] 1 [0|2-9] $8 \times 9 = 72$
[2-9] [0|2-9] 1 $8 \times 9 = 72$
 $81 + 2 \times 72 = 225$
28. 1 1 [0|2-9] 9
1 [0|2-9] 1 9
[2-9] 1 1 8
 $9 + 9 + 8 = 26$
29. 1 only (111)
30. $900 = 648 + 225 + 26 + 1$
31. 2024, 2042, 2204, 2240, 4024, 4042, 4204, 4240
 $42 - 24 = \underline{18}$
32. $4024 - 2240 = \underline{1784}$

2024	
2042	18
2204	162
2240	36
4024	1784
4042	18
4204	162
4240	36
Total	2216

33. $4240 - 2024 = \underline{2216}$

34. True
 $276 + 9 \times 4 \equiv 16 + 36 = 52 \equiv 0 \pmod{13}$
35. A = 1 or 2
Case: 17B
 $17 \equiv 4 \pmod{13}$
 $4B + 17 \equiv 4B + 4 \equiv 4(B + 1) \equiv 0 \pmod{13}$
 $B + 1 \equiv 0 \pmod{13}$
B = 12 (bad for not a single digit)
- Case: 27B
 $27 \equiv 1 \pmod{13}$
 $27 + 4B \equiv 1 + 4B \equiv 0 \pmod{13}$
B = 3
 $273 \div 13 = \underline{21} \leftarrow \text{answer}$
36. 2
37. 6
38. 4
39. 6
40. 12
41. $32 - 22 = 10$