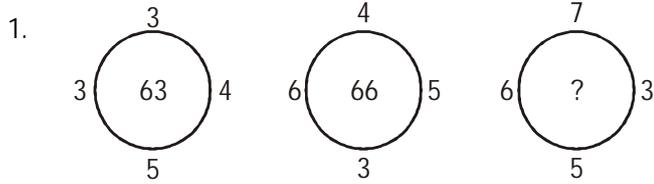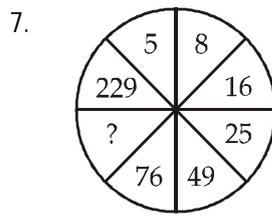# Chapter - 4

MISSING NUMBERS IN THE FIGURE

Answer Key with **Step-by-Step Solutions**
Includes: All MCQs + **Extra PYQs** with Detailed Explanations
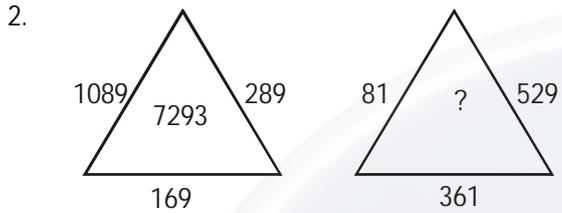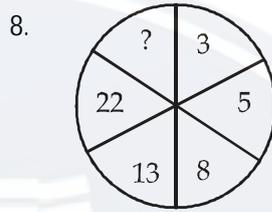
Previous Year Questions

1.

Circle 1: top 3, left 3, center 63, right 4, bottom 5
Circle 2: top 4, left 6, center 66, right 5, bottom 3
Circle 3: top 7, left 6, center ?, right 3, bottom 5

(a) 57
(b) 53
(c) 105
(d) 111

2.

Triangle 1: left 1089, right 289, center 7293, bottom 169
Triangle 2: left 81, right 529, center ?, bottom 361

(a) 3646
(b) 3189
(c) 3399
(d) 3933

3.

Triangle 1: left 49, right 25, center 3375, bottom 9
Triangle 2: left 4, right 36, center ?, bottom 100

(a) 2856
(b) 4268
(c) 5832
(d) 6464

4.

Triangle 1: left 841, right 784, center 84, bottom 729
Triangle 2: left 225, right 196, center ?, bottom 169

(a) 82
(b) 62
(c) 42
(d) 32
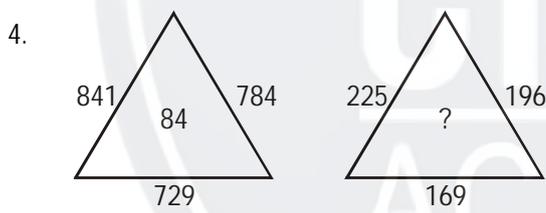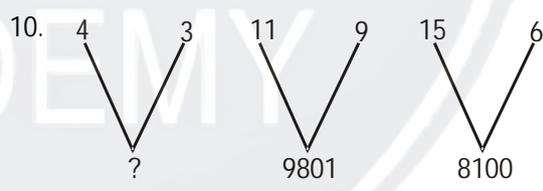
5.

9	5	6
7	6	7
4	8	?
252	240	210

(a) 4
(b) 5
(c) 6
(d) 3
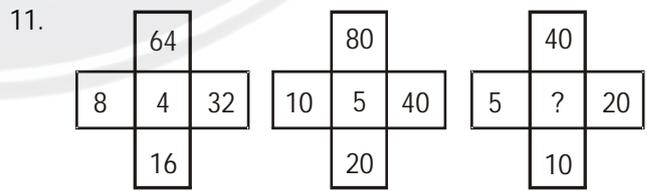
6.

5	17	23
7	8	2
9	15	5
42	80	?

(a) 50
(b) 60
(c) 70
(d) 98

7.

Circle divided into 8 sectors: 5, 8, 229, 16, ?, 25, 76, 49

(a) 148
(b) 150
(c) 125
(d) 53

8.

Circle divided into 6 sectors: ?, 3, 22, 5, 13, 8

(a) 1
(b) 26
(c) 39
(d) 45

9.

Circle outer ring: 2, 22, 9, 10, 12, 8, 26, 2
Inner ring: 343, ?, 2744, 216

(a) 1000
(b) 1728
(c) 878
(d) 560

10.

4 3 → ?
11 9 → 9801
15 6 → 8100

(a) 2250
(b) 144
(c) 11036
(d) 1216

11.

Cross 1: top 64, left 8, center 4, right 32, bottom 16
Cross 2: top 80, left 10, center 5, right 40, bottom 20
Cross 3: top 40, left 5, center ?, right 20, bottom 10

(a) 0
(b) 2.5
(c) 10
(d) 20

12.

8   (14)   15
13   (18)   22
25   (?)   41

(a) 33
(b) 42
(c) 14
(d) 32

13.
2	2	256
3	2	?
4	2	46656

(a) 2765   (b) 3125
(c) 8796   (d) 3008

14. $6 \times 3 = 13$ $5 \times 20 = 96$
$11 \times 7 = 67$ $19 \times 11 = ?$
(a) 191   (b) 194
(c) 207   (d) 209

15.
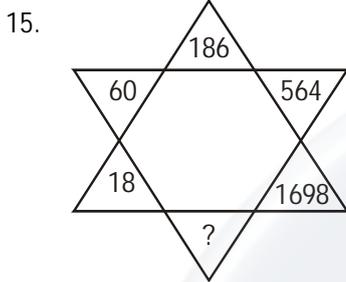
(a) 5052   (b) 5100
(c) 5656   (d) 5510

16.
M	H	E
R	I	?
V	K	K

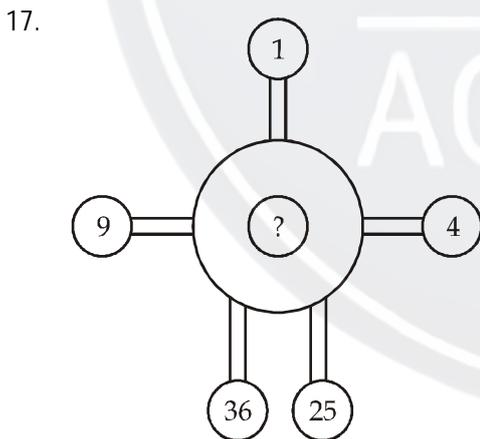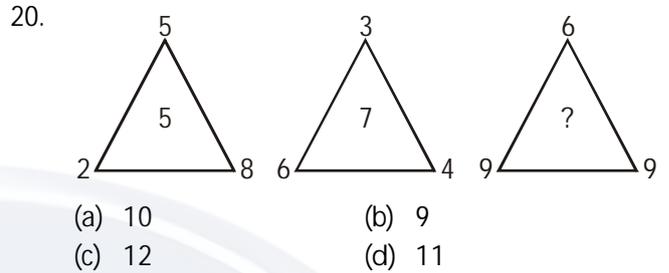(a) H   (b) I
(c) G   (d) F

17.

(a) 15   (b) 27
(c) 16   (d) 28

18. $94 + 16 = 42$
$89 + 23 = 78$
$63 + 45 = ?$
(a) 18   (b) 28
(c) 38   (d) 48

19.
49	100	64
9	36	4
81	1	25
19	?	15

(a) 14   (b) 16
(c) 17   (d) 18

20.

(a) 10   (b) 9
(c) 12   (d) 11

21.
13	9	24
11	?	6
16	20	10

(a) 19   (b) 16
(c) 11   (d) 20

22.
2	4
256	16

3	1
1	81

5	4
256	?

(a) 625   (b) 1225
(c) 125   (d) 25

23.
1	3	7
2	4	4
4	5	9
3	2	3
50	70	?

(a) 118   (b) 220
(c) 23   (d) 115

24.

(a) 31   (b) 40
(c) 7   (d) 36

25.
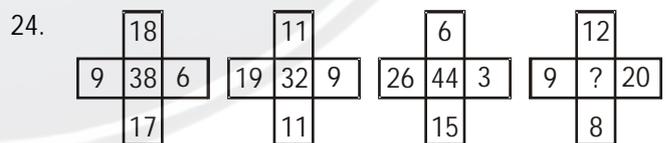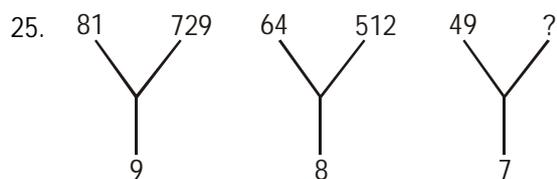
(a) 444   (b) 515
(c) 343   (d) 373

26.

8	17	33
12	5	29
10	13	?

(a) 9   (b) 23
(c) 33   (d) 43

27.

963	2	844
464	?	903

(a) 1   (b) 2
(c) 3   (d) 4

28.

16	210	14
14	156	12
12	?	10

(a) 90   (b) 100
(c) 110   (d) 120

29. 100 (25/6/25) 100   25 (25/5/36) 81   25 (25/4/25) 25   36 (49/?/16) 9

(a) 2   (b) 3
(c) 4   (d) 5

30.

Triangle 1: 3 (left), 8 (right), 48 (center), 4 (bottom)
Triangle 2: 5 (left), 7 (right), ? (center), 2 (bottom)
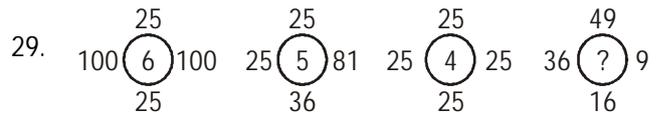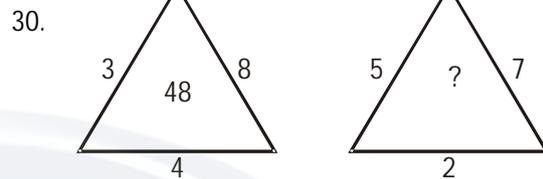
(a) 27   (b) 35
(c) 54   (d) 64

Practice Set Solutions

1. (b); In given sequence $(6 + 3) \times 3 = 27$, $(5 + 2) \times 3 = 21$, so $(10 + 8) \times 3 = 54$

2. (b); $(45 + 65) \div 11 = 10$, $(55 + 44) \div 11 = 9$ So, $\dfrac{56 + 10}{11} = 6$

3. (a); In given figure, outside present digits are perfect cube of number add all cube root of given number, so $\sqrt[3]{216} + \sqrt[3]{8} + \sqrt[3]{27} + \sqrt[3]{125} = 16$.

4. (b); Multiplication of opposite values and then their addition. $5 \times 7 + 4x = 43$, so, $x = 2$

5. (a); Given lowest digit is sum of square of given upper digits. So $8^2 + 4^2 = 64 + 16 = 80$

6. (a); $\dfrac{5 \times 4 \times 6}{2} = 60$, $\dfrac{4 \times 10 \times 11}{2} = 220$ then $\dfrac{7 \times 8 \times x}{2} = 56$ so x is 2.

7. (b); From downwards, $(12 + 6 + 12) = 30$. $(8 + 7 + 2) = 17$ so, $x + 9 + 7 = 21$, so $x = 5$.

8. (d); $\sqrt{49} + \sqrt{25} + \sqrt{4} \Rightarrow 7 + 5 + 2 = 14$, so $\sqrt{36} + \sqrt{16} + \sqrt{9} = 13$.

9. (c); The sum of every column is 20 then value will be 8.

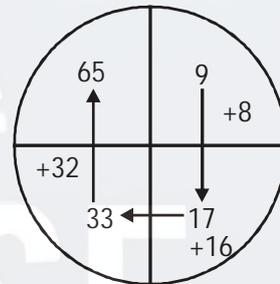10. (a); The exact middle digit is just half of sum of all outside digit.

11. (b); $0 \times 3 + 4 = 4$, $4 \times 4 + 5 = 21$, so $21 \times 5 + 6 = 111$

12. (c); In middle column in alphabets there is 2 place value difference and digit is multiplication of both first and third digit.

13. (c); Columnwise
I. $2 \times 7 \times 9 = 126$ II. $7 \times 3 \times 8 = 168$
III. $9 \times 4 \times ? = 216$
$\therefore ? = \dfrac{216}{9 \times 4} = 6$

14. (d);

Circle: 65 (top left), 9 (top right, +8), +32 (left), 33 ← 17 (bottom, +16)

15. (a); 8×2, 9×2, 10×2 in first diagram same as 9×2, 10×2, 11×2.

16. (c); $9 \times 2 - 6 = 12$, $4 \times 2 - 5 = 3$ so $8 \times 4 - 2 = 30$.

17. (a); $2 \times 14 = 28$, $3 \times 9 = 27$, so $4 \times x = 40$, so x is 10.

18. (a); Fourth last term of every column is sum of all above values, so $25 + 36 + 16 = 77$.

19. (a); First Row
$\Rightarrow \sqrt{169} + \sqrt{64} + \sqrt{81}$
$= 13 + 8 + 9 = 30$
Second Row
$\Rightarrow 25 + \sqrt{?} + \sqrt{49} = 50$
$\Rightarrow \sqrt{?} = 50 - 32 = 18$
$\therefore (?) = (18)^2 = 324$
Third Row
$\Rightarrow \sqrt{1296} + \sqrt{576} + \sqrt{100}$
$= 36 + 24 + 10 = 70$

20. (c); $\dfrac{649 - 143}{2} = (253)$, so $\dfrac{1084 - 482}{2} = \dfrac{602}{2} = 301$

21. (c); Here we get the lowermost term by adding the two uppermost terms and doubling it.
As, $(1 + 2) \times 2 = 6$ $(3 + 2) \times 2 = 10$,
Similarly,
$(3 + 4) \times 2 = 14$.

22. (c); First Column $= 4 \times 7 - 1 = 28 - 1 = 27$
Second Column $= 5 \times 8 - 2 = 40 - 2 = 38$
Third Column $= 6 \times 9 - 3 = 54 - 3 = 51$

23. (b); $5 \times 6 + 3 \times 3 = 39$
and, $7 \times 5 + 4 \times 4 = 51$
∴ $5 \times 5 + 3 \times 4 = 37$

24. (c); $9 + 7 - 5 = 11$
and, $6 + 4 - 8 = 2$
∴ $8 + ? - 4 = 7 = > ? = 3$

25. (c); $4 + 9 + 17 + 6 = 36$
$20 + 5 + 8 + 9 = 42$
$7 + 23 + 9 + 9 = 48$
$9 + 4 + 19 + ? = 54$
→ $54 - 32 = 22$

26. (c); $13 \times 17 = 221$
$12 \times 19 = 228$
$13 \times 18 = 234$

27. (b); $3 \times 3 = 9, 9 \times 3 = 27, 27 \times 3 = 81$
$6 \times 3 = 18, 18 \times 3 = 54, 54 \times 3 = 162$
$7 \times 3 = 21, 21 \times 3 = 63, 63 \times 3 = 189$

28. (a); $5 - 5 = 0 => 0^3 = 0$
$= 7 - 3 = 4, => 4^3 = 64$
$11 - 8 = 3 => 3^3 = 27$
$8 - 2 = 6 => 6^3 = 216$

29. (b); $1 + 2 + 4 + 3 = 10$;
$10 \times 5 = 50$
$3 + 4 + 5 + 2 = 14$;
$14 \times 5 = 70$
$7 + 4 + 9 + 3 = 23$;
$23 \times 5 = \boxed{115}$

30. (a); $(3)^2 + (2)^2 + (1)^2 = 9 + 4 + 1 = 14$
$(4)^2 + (3)^2 + (2)^2 = 16 + 9 + 4 = 29$
Similarly
$(5)^2 + (4)^2 + (3)^2 = 25 + 16 + 9 = 50$

31. (b); $8 \times 5 - 28 = 40 - 28 = 12$
$10 \times 3 - 16 = 30 - 16 = 14$
$9 \times 4 = ? = 25$
⇒ $36 - ? = 25$
∴ $? = 36 - 25 = 11$

32. (b); $3 \times 4 \times 5 = 60 \quad 7 \times 2 \times 4 = 56$
$5 \times ? \times 6 = 90$
∴ $? = \dfrac{90}{5 \times 6} = 3$

33. (a); $4 + 4 = 8, 8 + 8 = 16, 16 + 12 = 28$
$28 + 16 = 44, 44 + 20 = 64$

34. (b); $4 \times 2 \times 3 \times 3 = 72$
$9 \times 4 \times 2 \times 10 = 720$
$6 \times 20 \times 1 \times 6 = \boxed{720}$

35. (d); $5 + 4 = 9$ and $9 \times 2 = 18$
$6 + 3 = 9$ and $9 \times 3 = 27$
$12 + 4 = 16$ and $? = \dfrac{96}{16} = \boxed{6}$

36. (c); $(5)^3 + 1 = 125 + 1 = 126$
$(6)^3 + 1 = 216 + 1 = 217$

37. (a); $(21 + 1) - 2 = 22 - 2 = 20$
$(22 + 2) - 1 = 24 - 1 = 23$
$(? + 5) - 2 = 43$
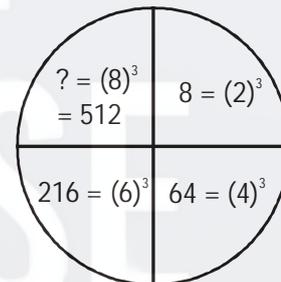⇒ $? = (43 + 2) - 5$
⇒ $? = 45 - 5 = 40$

38. (c); Columnwise
First Column $(7)^2 + (4)^2 + (2)^2 = 49 + 16 + 4 = 69$
Second Column $(3)^2 + (9)^2 + (1)^2 = 9 + 81 + 1 = 91$
Third Column $(2)^2 + (6)^2 + (5)^2 = 4 + 36 + 25 = 65$

39. (b);

$? = (8)^3 = 512 \quad 8 = (2)^3$
$216 = (6)^3 \quad\quad 64 = (4)^3$

40. (c); $4 + 4 = 8 \quad\quad 8 + 8 = 16$
$16 + 12 = 28 \quad 28 + 16 = 44 \quad\quad 44 + 20 = 64$

Distinct Solutions

41. (d); $(5 \times 2) + 12 = 22, (12 \times 2) + 5 = 29$, so $(13 \times 2) + x = 32$, so $x = 6$.

42. (c); From top digit 5 in clockwise direction multiplication of natural number 1, 2, 3, 4, 5. So, $600 \times 6 = 3600$.

43. (a); M (13) + J (10) = W (23), (A)(1) + H (8) = I (9)
So, G (7) + x = 20 ⇒ 20 − 7 = 13 (M) so ans. is M.

44. (a); Here the number series is as follows-
$2^2 - 3 = 1$
$1^2 - 2 = -1$
∴ $3^2 - 4 = 5$.

45. (a); $1 + 7 + 3 + 5 + 2 + 6 = 24$
$4 + 3 + 1 + 3 + 2 + 5 = 18$

Therefore,

2 + 5 + 3 + 4 + 7 + 1 = 22

46. (b); 5 × 3 + 1 = 16   16 × 3 + 1 = 49

9 × 3 + 2 = 29   29 × 3 + 2 = 89

Therefore,

15 × 3 + 3 = 48   48 × 3 + 3 = 147

47. (a); Columnwise

6 × 6 = 36   6 × (6 – 2) = 6 × 4 = 24

9 × 9 = 81   9 × (9 – 2) = 9 × 7 = 63

12 × 12 = 144

12 × (12 – 2) = 12 × 10 = 120

48. (b); 20 × 3 + 6 = 60 + 6 = 66

66 × 3 + 6 = 198 + 6 = 204

204 × 3 + 6 = 612 + 6 = 618

618 × 3 + 6 = 1854 + 6 = 1860

1860 × 3 + 6 = 5580 + 6 = $\boxed{5586}$

49. (b); In each sector pair of opposite letters are given.

$G \xrightarrow{\ +1\ } H$

The opposite letter of H is S.

50. (c); 3 × 2 – 1 = 6 – 1 = 5

5 × 2 – 2 = 10 – 2 = 8

8 × 2 – 3 = 16 – 3 = 13

13 × 2 – 4 = 26 – 4 = 22

22 × 2 – 5 = 44 – 5 = 39

Previous Year Solutions

1. (d);

5 × 4 × 3 = 60 + 3 = 63   3 × 5 × 4 = 60 + 6 = 66

5 × 3 × 7 = 105 + 6 = 111

2. (d); $\sqrt{1089} \times \sqrt{289} \times \sqrt{169}$ = 33 × 17 × 13 = 7293

$\sqrt{81} \times \sqrt{529} \times \sqrt{361}$ = 9 × 23 × 19 = 3933

3. (c); $(\sqrt{49} + \sqrt{9} + \sqrt{25})^3 = (7 + 3 + 5)^3 = (15)^3 = 3375$

$(\sqrt{4} + \sqrt{100} + \sqrt{36})^3 = (2 + 10 + 6)^3 = (18)^3 = 5832$

4. (c); $\sqrt{841} + \sqrt{784} + \sqrt{729}$ = 29 + 28 + 27 = 84

$\sqrt{225} + \sqrt{196} + \sqrt{169}$ = 15 + 14 + 13 = 42

5. (b); 9 × 7 × 4 = 252 ; 5 × 6 × 8 = 240; 6 × 7 × $\boxed{5}$ = 210

6. (b); 5 + 7 + 9 = 21 × 2 = 42

17 + 8 + 15 = 40 × 2 = 80

23 + 2 + 5 = 30 × 2 = 60

7. (a);

8. (c); 3 × 2 – 1 = 5   5 × 2 – 2 = 8   8 × 2 – 3 = 13

13 × 2 – 4 = 22   22 × 2 – 5 = $\boxed{39}$

9. (b); $9 – 2 = 7^3 = 343$ $8 – 2 = 6^3 = 216$

$26 – 12 = 14^3 = 2744$ $22 – 10 = 12^3 = 1728$

10. (b); $11 × 9 = 99^2 = 9801$ $15 × 6 = 90^2 = 8100$

$4 × 3 = 12^2 = 144$

11. (b); All numbers are divided by 4 in 1st figure. All number are divided by 5 in 2nd figure. In the 3rd figure, all numbers will be divided by 2.5

12. (d); $8 + \dfrac{14}{2} = 15$ $13 + \dfrac{18}{2} = 22$ $25 + \dfrac{\boxed{32}}{2} = 41$

13. (b); (2 + 2) = 4 × 4 × 4 × 4 = 256

(3 + 2) = 5 × 5 × 5 × 5 × 5 = 3125

(4 + 2) = 6 × 6 × 6 × 6 × 6 × 6 = 46656

14. (a); 6 × 3 → 18 – (6 – 1) = 13

5 × 20 → 100 – (5 – 1) = 96

11 × 7 → 77 – (11 – 1) = 67

19 × 11 → 209 – (19 – 1) = 191

15. (b); $18 \times 3 = 54 + 6 \to 60$

    $60 \times 3 = 180 + 6 \to 186$

    $186 \times 3 = 558 + 6 \to 564$

    $564 \times 3 = 1692 + 6 = 1698$

    $1698 \times 3 = 5094 + 6 = 5100$

16. (b); $M (13) = H (8) + E (5)$

    $V (22) = K (11) + K (11)$

    $R (18) = I (9) + I (9)$

17. (c); The square of digits are in series

    1^2 2^2 3^2 4^2 5^2 6^2

    ↓   ↓   ↓   ↓   ↓   ↓

    1   4   9   16   25   36

18. (c); $(9 \times 4) + (1 \times 6) = 36 + 6 = 42$

    $(8 \times 9) + (2 \times 3) = 72 + 6 = 78$

    $(6 \times 3) + (4 \times 5) = 18 + 20 = \boxed{38}$

19. (c); $\sqrt{49} + \sqrt{9} + \sqrt{81} = 7 + 3 + 9 = 19$

    $\sqrt{64} + \sqrt{4} + \sqrt{25} = 8 + 2 + 5 = 15$

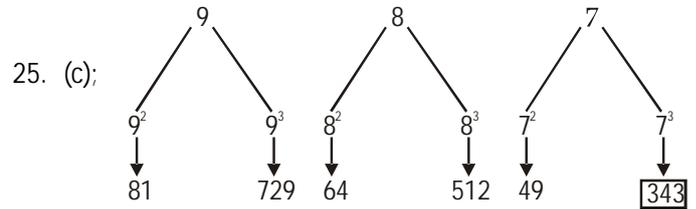 $\sqrt{100} + \sqrt{1} + \sqrt{36} = 10 + 1 + 6 = 17$

20. (c); $(2 + 8) = (5 + 5)$ $(3 + 7) = (6 + 4)$

    $(9 + 9) = (12 + 6)$

21. (c); $13 + 11 + 16 = 40$ $24 + 6 + 10 = 40$

    $9 + ? + 20 = 40 \Rightarrow ? = 40 - 29 = 11$

22. (a); $2^4 = 16 ; 4^4 = 256$

    $1^4 = 1 ; 3^4 = 81$

    $4^4 = 256 ; 5^4 = 625$

23. (d); $(1 + 2 + 4 + 3) \times 5 = 50$

    $(3 + 4 + 5 + 2) \times 5 = 70$

    $(7 + 4 + 9 + 3) \times 5 = 115$

24. (a); $(17 + 18) + (9 - 6) = 35 + 3 = 38$

    $(11 + 11) + (19 - 9) = 22 + 10 = 32$

    $(15 + 6) + (26 - 3) = 21 + 23 = 44$

    $(12 + 8) + (9 - 20) = 20 + 11 = \boxed{31}$

25. (c);

    9   8   7

    9^2 9^3 8^2 8^3 7^2 7^3

    81   729   64   512   49 $\boxed{343}$

26. (c); $8 \times 2 + 17 = 33$ $12 \times 2 + 5 = 29$

    $10 \times 2 + 13 = 33$

27. (b); $(9 + 6 + 3) - (8 + 4 + 4) = 2$

    $(4 + 6 + 4) - (9 + 0 + 3) = 2$

28. (c); $16 \times 14 - 14 = 210$ $14 \times 12 - 12 = 156$

    $12 \times 10 - 10 = 110$

29. (c); $\dfrac{\sqrt{25} + \sqrt{100} + \sqrt{25} + \sqrt{100}}{5} = 6$

    $\dfrac{\sqrt{25} + \sqrt{81} + \sqrt{36} + \sqrt{25}}{5} = 5$

    $\dfrac{\sqrt{25} + \sqrt{25} + \sqrt{25} + \sqrt{25}}{5} = 4$

    $\dfrac{\sqrt{49} + \sqrt{9} + \sqrt{16} + \sqrt{36}}{5} = 4$

30. (b); $(3 \times 8 \times 4) \div 2 = 48$

    $(5 \times 7 \times 2) \div 2 = 35$