

ANSWER KEY

1. D

$$W = 2w$$

$$L = 4l$$

$$A_{\text{big}} = 8lw$$

$$A_{\text{small}} = lw$$

Therefore it is 8 times greater

2. B

Solution:

$$54 \text{ clay pots} = 18 \text{ minutes}$$

$$18/54 = \frac{1}{3} \text{ minute or } 20 \text{ seconds}$$

$$1 \text{ clay pot} = 18/54 = \frac{1}{3} \text{ minute}$$

$$81 \text{ clay pots} = \frac{1}{3} \times 81 = 27 \text{ minutes, which is Option B}$$

3. C

$\angle Q = \angle S \leftarrow$ Parallelogram have equal opposite angle

$$\angle Q = 180 - 110 = 70 \text{ degree}$$

$$\angle Q = 70 \text{ degree}$$

$$\text{Triangle total angle} = 180$$

$$x = 180 - 50 - 70 = 60 \text{ degree}$$

4. D

$$P = 24 \text{ cm}$$

$$2(8) + 2W = 24$$

$$W = 4$$

$$A = 8 \times 4 = 32 \text{ cm}^2$$

5. E

$$P = ?$$

$$L = 16\text{m}$$

$$A = a = 8 \times 6 = 48 \text{ m}^2$$

$$48 = 16W$$

$$W = 3 \text{ m}$$

$$P = 2(3) + 2(16)$$

$$P = 38 \text{ m}$$



6. A

Sal = 12 mins

Abe = 10 mins

LCM = 60 therefore after 60 mins they will simultaneously finish cleaning

3:00 + 1 hour = 4:00 PM

7. E

Total = \$900

$900/8 = \$112.5$

$900/5 = \$180$

$180 - 112.5 = \$67.50$

8. B

80% bankers = cars

55% accountant = cars

70% employees = cars

Let x = bankers

Accountant = $10 - x$

10 = employees ← Assume

Bankers with car + Accountants with car = Employees with car

$0.8(x) + 0.55(10 - x) = 0.7(10)$

$x = 0.6$

Banker / employees = $0.6/1 = 0.6$ or 60%

9. C

If $30^\circ \leq \alpha^\circ \leq 50^\circ$

If 30

$180 - 30 = 150$

$2b^\circ = 150$

If 50

$180 - 50 = 130$

$2b^\circ = 130$

Value of $2b^\circ$ between including 130-150

Choice C

If 65



$$2b = 2(65) = 130 \leftarrow \text{Correct}$$

$$2b = 2(75) = 150 \leftarrow \text{Correct}$$

$$\text{Therefore } 65^\circ \leq b^\circ \leq 75^\circ$$

10. B

1 sack = 750 potatoes

$$1 - \frac{1}{2} = \frac{1}{2} \leftarrow \text{day 1}$$

$$\frac{1}{2} - \frac{1}{2}(\frac{1}{2}) = \frac{1}{4} \leftarrow \text{day 2}$$

$$\frac{1}{4} - \frac{1}{2}(\frac{1}{4}) = \frac{1}{8} \leftarrow \text{day 3}$$

$$\frac{1}{8} - \frac{1}{2}(\frac{1}{8}) = \frac{1}{16} \leftarrow \text{day 4}$$

$$\frac{1}{16} - \frac{1}{2}(\frac{1}{16}) = \frac{1}{32} \leftarrow \text{day 5}$$

Other Solution:

Divide it by two per day because it loses half

$$750/2 = 375 \text{ potatoes} \leftarrow \text{Day 1}$$

$$375/2 = 187 \text{ potatoes} \leftarrow \text{Day 2}$$

$$187/2 = 93.75 \text{ potatoes} \leftarrow \text{Day 3}$$

$$93.75/2 = 46.875 \text{ potatoes} \leftarrow \text{Day 4}$$

$$46.875/2 = 23.4375 \text{ potatoes} \leftarrow \text{Day 5}$$

$$23.4375 / 750 = \mathbf{1/32}$$



11. B

8000 marbles = black and white

Let X = Total of black marbles

White marbles = Total - Black marbles

White marbles = 8000 - X

$$\frac{1}{4}(X) + \frac{3}{5}(8000 - X) = 2875$$

$$\frac{1}{4}X + 4800 - \frac{3}{5}X = 2875$$

$$X = 5500 \text{ black marbles}$$

12. A

$$a = s$$

$$b = s + 2$$

$$c = s + 4$$

$$s + (s + 2) + (s + 4) = 180$$

$$s = 58 \text{ degree}$$

13.D

Let X = the first number

$X, X + 2, \dots, X + 10$

$S_n = n/2 (2a + (n-1)(d)) \leftarrow \text{Formula}$

$$76 = 4/2 (2X + (4-1)(2))$$

$$X = 16$$

$$\text{3rd number} = 16 + 2 + 2 = 20$$

$$S_n = 4/2 (2(20) + (4-1)(2))$$

$$S_n = 92$$



14.B

$$\text{Perimeter of PQR} = 7 + 5 + 12 = 24$$

$$24/3 = 8 \text{ cm} \leftarrow \text{divide 3 because it is an equilateral triangle}$$

15.D

Line XY = center line

Get the distance of P

P distance = after the 1 strip paper to the right

Find the letter with same distance to the left

D have the same distance to the left

Therefore D is the answer

16.C

Divide the shape into 3 parts

$$\text{Rectangle} = 4 \times 2 = 8 \text{ cm}^2$$

$$\text{Rectangle} = 8 \times 6 = 48 \text{ cm}^2$$

$$\text{Triangle : } b = 6, h = 6 = 18 \text{ cm}^2$$

$$8 + 48 + 18 = 74 \text{ cm}^2$$

17.A

James buys 3 cans of peaches, 8 cans of pickles, and 5 cans of plums for \$18.

Fred buys 1 can of peaches, 6 cans of pickles, and 3 cans of plums for \$12.

Let X = Peaches ; Y = Pickles; Z = Plum

$$3X + 8Y + 5Z = 18$$

$$X + 6Y + 3Z = 12$$

Subtract the equation

$$(3X + 8Y + 5Z = 18) - (X + 6Y + 3Z = 12)$$

$$2X + 2Y + 2Z = 6$$

Divide the equation by 2 to get $X + Y + Z$

$$X + Y + Z = 3$$

$$1 \text{ peaches} + 1 \text{ pickles} + 1 \text{ plum} = \$3$$

Therefore the answer is \$3

18. B

$$D = 660 \text{ km}$$

$$A = 80 \text{ km per hour}$$

$$B = 85 \text{ km per hour}$$

$$80(X) + 85(X) = 660$$

$$X = 4 \text{ hours}$$

$$9:00 \text{ AM} + 4 \text{ hours} = 1:00 \text{ PM}$$

19. E

$$10\% = 24 \times 25 = 600$$

$$10/100 = 25 \times 24 / X$$

$$10/100 = 600 / X$$

$$X = 6000 \text{ m}^2$$

20. A

Count including A up to 21 clockwise and anti-clockwise

Both will be at E

21. D

$$5X + 8Y = \text{whole number}$$

$$5(2) + 8(4) = 42, \text{ correct}$$

$$5(6) + 8(1) = 38, \text{ correct}$$

$$5(5) + 8(1) = 33, \text{ correct}$$

$$5(1) + 8(2) = 21 \text{ remainder } 1, 22 \text{ is not also divisible by } 5 \text{ or } 8, \text{ wrong}$$

$$5(4) + 8(0) = 20, \text{ correct}$$

22. B

$$52\,078 / 3 = 17\,359 \text{ remainder } 1$$

Thus you need to add 2 for it to be divisible by 3

$$N = 2$$



23.D

$$11/6 / \frac{1}{6} = 11 \text{ meters}$$

$$15/6 / \frac{1}{6} = 15 \text{ meters}$$

$$11 \times 15 = 165 \text{ square meters}$$

24.C

Given:

$$6 \text{ cm/min} = \text{Up}$$

$$14 \text{ cm/min} = \text{Down}$$

$$1 \text{ min} = \text{total time}$$

Solution:

$$V = d/t$$

Let x = distance

$$t = d/V$$

Time for Up trail + Time for down trail = Total time

$$(x)/6 + (x)/14 = 1$$

$$x = 4.2 \text{ cm}$$



25.E

$$\text{Rectangle} = 36 \times 48 \text{ cm}$$

$$36 \times 48 = 1728 \text{ cm}^2$$

$$1728/16 = 108 \text{ Squares}$$

26.B

Let the Perimeter be 100

$$p = 100 / 8 = 12.5$$

$$q = 20$$

$$r = 16.67$$

Therefore $p < r < q$

27.C

$$20\% = 94 \text{ average}$$

$$50\% = 90 \text{ average}$$

$$30\% = 84 \text{ average} \leftarrow \text{remaining}$$

Solution:

Assume total number of students = 10

$$20\% = 2$$

$$50\% = 5$$

$$30\% = 3$$

$$[94(2) + 90(5) + 84(3)] / 10 = 89$$

28. A

$$\text{Black} = \frac{2}{3} (45) = 30$$

$$\text{Removed} = \frac{1}{3} (30) = 10$$

$$45 - 10 = 35 \text{ balls left}$$

29. B

\$5.6 per hour for 6.25 hours

1.25 (5.6) = overtime

$$10.25 = ?$$

$$6.25 (5.6) + 4(5.6)(1.25) = \$63$$

30. E

$$\frac{1}{5} = \$64 \text{ each}$$

$$25 \text{ remaining} = \frac{1}{5}$$

$$\frac{1}{5} = 25/X$$

$$X = 25 \times 5 = 125$$

$$125 - 25 = 100 \leftarrow \frac{1}{5}$$

$$100 \times 64 = \$6400$$

31. B

55 per hour

110 per hour = every friday

50 hours including 10 hours on friday

$$55(40) + 110(10) = 3300 \text{ bracelets}$$

32. C

A = 3 hours

B = 2.5 hours

$$1/T = \frac{1}{3} + \frac{1}{2.5}$$

$$1/T = 11/15$$

$$T = 15/11 \text{ hours}$$

$$T = 1.36 \text{ hours} \leftarrow \text{together}$$

Flame thrower A and B (1hour)

$$1/1.36 = (25/34)T \leftarrow \text{melted using both Flamethrower A and B}$$



$1 - (25/34) = (9/34)$ T ← Left to melt by Flame thrower B alone
 $9/34 (2.5) = 45/68$ hours or 40 mins

33. D

15% = male

60% of original left

Let original number be 100

15 male

85 fem

$(85-X) + 15 = 60$

$X = 40$

$40/85$ ← divided by 5

$8/17$



34. D

400 containers in 8 mins

1 hour = ?

$60 \text{ mins} / 8 \text{ mins} = 7.5 \text{ sets}$

$7.5 \times 400 = 3000$ containers

35. E

$3 \times 8 = 24$

$24 \times 0 = 0$

$24 \times 5 = 120$

$24(x)$ ← 2 digit number for x ranging from 1-4 (4 such number)

Therefore the answer is 4