

①

Intra school Maths Olympiad (2017)  
Class VIII (Marking scheme)

Ans-①  $(x^2 + 6x + 5)(x^2 - 1)$   
 $= x^2(x^2 - 1) + 6x(x^2 - 1) + 5(x^2 - 1)$   
 $= x^4 - x^2 + 6x^3 - 6x + 5x^2 - 5$   
 $= \boxed{x^4 + 6x^3 + 4x^2 - 6x - 5} \text{ (C)}$

Ans-②  $p^4 - 81$   
 $= p^4 - 3^4$   
 $= (p^2 + 3^2)(p^2 - 3^2) \quad ((a^2 - b^2) = (a+b)(a-b))$   
 $= (p^2 + 9)(p + 3)(p - 3)$   
Factor  $\boxed{(p - 3)} \text{ (D)}$

Ans-③  $\boxed{\text{kite}} \text{ (b)}$

Ans-④ Pythagorean triplet  
 $50^2 = 40^2 + 30^2$   
 $2500 = 1600 + 900$   
 $\boxed{2500 = 2500} \text{ (C)}$

Ans-⑤  $ab = 7$ ,  $a + b = 6$ ,  $a^2 + b^2 = ?$   
 $(a + b)^2 = a^2 + b^2 + 2ab$   
 $(6)^2 = a^2 + b^2 + 2 \times 7$   
 $36 = a^2 + b^2 + 14$   
 $36 - 14 = a^2 + b^2$   
 $\boxed{a^2 + b^2 = 22} \text{ (E)}$

Ans-⑥  $\boxed{\text{Both (2) and (3)}} \text{ (A)}$

Ans-7 Percentage decrease =  $\frac{(700-672)}{700} \times 100\%$   
 $= \frac{28}{700} \times 100\%$   
 $= \boxed{4\%}$  (B)

Ans-8 Euler's formula

$$F + V = E + 2$$

$$11 + 18 = E + 2$$

$$29 - 2 = E$$

$$\boxed{E = 27}$$
 (A)

Ans-9

Discount % =  $\boxed{\frac{(x-y)}{x} \times 100}$  (D)

Ans-10

Numbers less than 5 = 1, 2, 3, 4, 5

$$\text{Probability} = \frac{5}{10}$$

$$= \boxed{\frac{1}{2}}$$
 (E)

Ans-11

$$360 \div 24 + 56 \times 5 - 48$$

$$= 360 \div 24 + 56 \times 5 - 48$$

$$= 15 + 280 - 48$$

$$= 295 - 48 = \boxed{247}$$
 (C)

Ans-12

Pattern

$$(15-5) \times (2+6) = 80$$

$$(9-4) \times (7+6) = 65$$

Now,  $(13-11) \times (16+8) = \boxed{48}$  (B)

Ans-13

Sum of Inner circle = Sum of outer circle

$$\boxed{0}$$
 (C)

14

R4A NIE

Two (B)

Ans-15

Flyers (C)

Ans-16

$$9^n + 9^n + 9^n = 3^{2013}$$

$$(3^2)^n + (3^2)^n + (3^2)^n = 3^{2013}$$

$$3^{2n} (1+1+1) = 3^{2013}$$

$$3^{2n} \cdot 3 = 3^{2013}$$

$$3^{2n+1} = 3^{2013}$$

$$2n+1 = 2013$$

$$2n = 2012$$

$$n = 1006 \text{ (B)}$$

Ans-17

Let numbers be  $x, y$

$$x^3 = 8y^3 \rightarrow \textcircled{1}$$

and  $x^3 + y^3 = 243 \rightarrow \textcircled{2}$

From  $\textcircled{1}$  &  $\textcircled{2}$ ,  $y = 3$ ,  $x = 6$

Difference =  $3$  (A)

Ans-18

$$= \frac{x(x-b) + x(x-a)}{(x-a)(x-b)} = 2$$

$$= x^2 - xb + x^2 - xa = 2(x-a)(x-b)$$
$$= 2(x^2 - xb - ax + ab)$$

$$x = \frac{2ab}{a+b} \text{ (C)}$$

2





Q-24) Let 'b' be the width of each flower bed. (1)

Now,  $L = 24 \times b \rightarrow$  (1)

&  $S = 8 \times b \rightarrow$  (2)

from (1) & (2), we get

$$\frac{L}{S} = \frac{24 \times b}{8 \times b}$$

$$\frac{L}{S} = 3$$

$$\boxed{S = \frac{1}{3} L} \text{ (D)}$$

Ans - 25) let height of the lamp post be x

Then

$$\frac{5}{2} = \frac{x}{8}$$

$$\boxed{x = 20 \text{ feet}} \text{ (A)}$$

