MARKING SCHEME

SESSION ENDING EXAM:2018-19

CLASS : IX

SUBJECT : MATHEMATICS

| Q. No. | Marking Scheme | Mark Allotted |
| --- | --- | --- |
| 1. | $\sqrt[3]{\frac{27 ×27}{125×125}}=$ | ½ |
|  |  | ½ |
| 2. | Add:$ 2\sqrt{2}+5\sqrt{3}and 3\sqrt{3}- 10√2$ | ½ |
|  |  | ½ |
| 3. |  | ½½ |
| 4. |  | 1 |
|  |  |  |
| 5. | ∠BAD = 3k–40°, ∠CAD = 2k°. | ½ |
| 6. | No. of bags of wheat having weight more than 5kg=7p(more than 5kg of flour)= | ½ |
|  |  | ½ |
| 7. |  | ½ |
|  |  | ½ |
|  | ∴ Two rational nos. are –  | 1 |
| 8. | (i) $98×102$=(100-2)(100+2)Using identity (x-a)(x+a)=$x^{2}-a^{2} $ = 1002 -22 = 10000-4= 9996 (ii) $(89)^{3}=(100-11)^{3}$ Using identity $(a-b)^{3}=a^{3}-3ab\left(a-b\right)-b^{3}$  $(100-11)^{3}=100^{3}-3×100×11\left(100-11\right)-11^{3}$ =1000000-3300$×(89)$-121=1000000-293700-121= 1000000-293821= 706179  | ½½ ½ ½  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  | 1 |
| 9. | Area of parallelogram ABCD = CD × AE = AB × AE = 16 × 8 = 128 cm2 | ½ ½  |
|  | ∴ Area of parallelogram = AD × CF 128 = AD × 10  = AD 12.8cm = AD | ½ ½  |
| 10. | For each postulate | 1+1 |
| 11. | Perimeter of triangle = 540cm 12x+17x+ 25x = 540 x = $\frac{540}{54}$ = 10cm | ½  |
|  |  So sides are = 12(10),17(10) and 25(10) = 120cm,170cm and 250 cm S = $\frac{540}{2}$ = 270 cm |   |
|  | Area = $\sqrt{270×150×100×20}$ | ½ |
|  |  = $\sqrt{3×3×3×2×5×3×5×2×5×2×5×2×5×2×2×5}$ |  |
|  |  = 3$×3×2×5×5×2×5×2$ = 9000 cm2  | ½ |
| 12. | Median =  63 =  | 1 |
|  |  126–2=4x  31 = x | 1 |
|  |  |  |
| 13. | =(3x)3 + y3 + z3 – 3(3x)(y)(z) = (3x+y+z)(9x2 +y2+z2 -3xy-yz-3xz)OrFind the value of *k*, if *x* – 1 is a factor of 4*x*3 + 3*x*2– 4*x* + *k*. = 4(1) + 3(1) -4(1) +k =04+3-4+k =0k =-3 | ½  |
|  |  | ½  |
|  |  | 1 |
|  |  |  |
|  |  |  |
| 14. | (i) For representing on number line correctly | ½  |
|  | (ii) For converting to linear equation in 2 variables | ½  |
|  | Finding solution for correct plotting | 11 |
| 15. | For each correct answer = ½  | 3 |
|  |  |  |
| 16. | For given, to prove and figure | 1 |
|  | Proof: AC||BE (given)∴ ar (ΔABC) = ar (ΔACE) – (1) |  |
|  | as they have same base and lie between same parallels | 1 |
|  | Adding ar (ΔADC) both sides in (1)ar (ΔABC) + ar (ΔADC) = ar (ΔACE) + ar (ΔADC) | 1 |
|  | ar (quad. ABCD) = ar (ΔADE)ORABEDCFor correct figureFor correct constructionProof: AD is median so BD = DCarea of ΔAB = × BD × AE = × DC × AE = area of ΔADC | 1½ ½ 1 |
|  |
| 17. | For given, to prove and figure | 1 |
|  | Proof: Consider ΔABC and ΔADE AB = ADgiven AC = AE ∠BAD = ∠EAC (given) adding ∠ADC both sides ∠BAD + ∠ADC = ∠EAC + ∠ADC ∠BAC = ∠DAE ∴ ΔABC ≅ ΔADE (SAS) ∴ BC = DE (by cpct) | ½ ½½½  |
|  | (OR) |  |
|  | For given, to prove and figure | 1 |
|  | Proof: Consider ΔAPD and ΔBPE, AP = PB (P mid pt. of AB) ∠BAD = ∠ABER (given) also ∠EPA = ∠DPB add ∠EPD both sides ∠EPA + ∠EPD = ∠DPB + ∠EPD ∠APD = ∠BPE ∴ ΔAPD ≅ ΔBPE (by ASA) ∴ AD = BE (by cpct) | ½ ½ ½ ½  |
| 18. | Given, to prove and figure | ½  |
|  | Proof: PB = DC and AB||DC so AE = CF and AE || CF ∴ AECF is parallelogram | ½  |
|  | In Δ ABQ, E is mid pt. of AB and EP||AQ then by converse of mid pt. theoremP is also mid pt. of BQ. ∴ BP = PQ –(1)Similarly in ΔDPC, we obtain Q is mid point of DP. ∴ DQ = QP – (2) from (1) & (2) we get, BP=PQ=DQ | ½ ½ ½ ½  |
| 19. | ∠BDC = 40° (Angles in same segment)In ΔBDC, ∠DBC+∠BDC+∠DCB=180° 60°+40°+∠DCB = 180° ∠DCB = 180°–100° = 80°given, AB=AC so ∠BAC = ∠BCA = 40° ∴ ∠ECD = ∠BCD – ∠BCA = 80°–40°=40°(OR) | ½ 1½ 1 |
|  | ABDCE234 | 1 |
|  | Given: In trapezium ABCD, AB||CD and AD=BCTo prove: ABCD is cyclic trapeziumConstruction: From B, draw BE||ADProof: AB||DE and AD||BE so, ABCD is a parallelogram so, ∠1 = ∠2 – (1) Also AD=BC=BE ∴ΔBEC is an isosceles triangle ∴∠3=∠4 – (2) Adding (1) and (2) we get ∠2+∠3 = ∠1+∠4 180° = ∠1+∠4 ∴ ABCD is cyclic trapezium  | ½ ½ ½ ½  |
| 20. | y:z=3:7∴ y = 3k, z=7k y+z = 180° 3k+3k = 180° 10k = 180° k = = 18° ∴ y = 3k = 3×18°=54° x+y = 180° x+54° = 180° x=18°–54° x=126° | ½ ½ 1½ ½  |
| 21. | Area covered by roller in one revolution = CSA of cylindrical roller = 2$πrh$= 2$×\frac{22}{7}×$ $42×120= $44 $×720=31680cm^{2}$So total area of ground = 500 $×Area covered by roller in one revolution $$$=500×31680$$$$=15840000 cm^{2}$$$$= \frac{15840000}{10000}=1584 m^{2}$$  | ½  |
|  |   | ½ ½ ½ ½½  |
| 22. | Total workers = 100 |  |
|  | (a) (b)  | 11 |
|  | Value: Children below 18 should not be kept as workers. Child labour is an abuse we should encourage them to go to school. | 1 |
| 23. |  | ½  |
|  | =  | 1 |
|  | =  | 1 |
|  | = 11–6 | ½ |
|  | 11–6 = a + b ∴ a =11, b = –6 | ½+½  |
| 24. | Let force applied : yAnd acceleration produced : xSo linear equation is  Y = 15x  | ½  |
|  |  | 11 |
|  | For finding points

|  |  |  |  |
| --- | --- | --- | --- |
| x | 0 | 1 | -1 |
| y | 0 | 15 | -15 |

 | ½ |
|  |  | 1 |
| 25. | *z*3 – 23*z*2 + 142*z* – 120 = *z*3 – *z*2 – 22*z*2 + 22*z* + 120*z* – 120= *z*2(*z* –1) – 22*z*(*z* – 1) + 120(*z* – 1) = (*z* – 1) (*z*2 – 22*z* + 120)*Now,z*2 – 22*z* + 120 = *z*2 – 12*z* – 10*z* + 120= *z*(*z* – 12) – 10(*z* – 12)= (*z* – 12) (*z* – 10)  *z*3 – 23*z*2 – 142*z* – 120 = (*z* – 1)(*z* – 10)(*z* – 12) | 1111 |
|  |  |  |
| 26. | For either theorem |  |
|  | Correct figuregivenTo proveconstructioncorrect proof | 1½½2 |
| 27. | * Drawing line segment 12.5
 | ½ |
|  | * Correct construction of 30° and 15° angles at the ends of line segment.
 | 1+1 |
|  | * Drawing perpendicular bisectors
 | 1 |
|  | * Construction of required triangle
 | ½ |
| 28. | Construct a trapezium with parallel sides givenConstruct a parallelogram in between Find its height as 11.2 mArea of trapezium by using formula = 196 m2 OR Radius=$ 6 m$Height of cylinder h= 8m L2 = h2+ r2L2 = 64+36=100L = 10 m ORTaruplin required for making tent =C.S.A. of Cone= $π r l$ $3.14 ×6×10 $= 188.4 m2∴ area of cloth = Taruplin required for making tentL $×B=188$.4 = L$×3$ = 188.4  So L = 62.8 m Total lenth of cloth = 62.8 + 0.20 = 63 m   | 111122 |
| 29. | Let radius be r m |  |
|  | Inner surface area of dome = 2 r2Cost of white washing at the rate of Rs 2 per m2 = 2×2Πr2 = Rs 4Πr2 | ½ |
|  |  4Π r2 = 498.96 r2 =  r = m | ½1 |
|  | (i) Inner curved surface area = 2Π r2 = 2× = 249.48 m2 | ½½ |
|  | (ii) Volume of air inside dome =  =  = 523.9 m3 | ½½  |
| 30. | * Finding class mark of each interval correctly
 | 1 ½  |
|  | * Correct axes and values
 | 1 |
|  | * Drawing frequency polygon correctly
 | 1 ½ |
|  |  |  |
|  |   |  |
|  |  |  |
|  |  |  |