

For all following questions, M is on the side AB, and N is on the side AC of $\triangle ABC$. MN is parallel to BC. MC and NB intersect at point P. Note: In this set of problems, brackets are used to represent the areas. For example, $[\triangle ABC]$ means the area of $\triangle ABC$.

1. $MN = 12$, $BC = 20$, $MP = 12$, What is the length of CP and MC?

$$CP = 20 \quad MC = 32$$

2. $MP = 42$, $MC = 91$, $MN = 42$, What is the length of BC?

$$49$$

3. $AB = 81$, ~~AB~~ = 45, $MP = 36$, What is the length of CP and MC?

$$MB$$

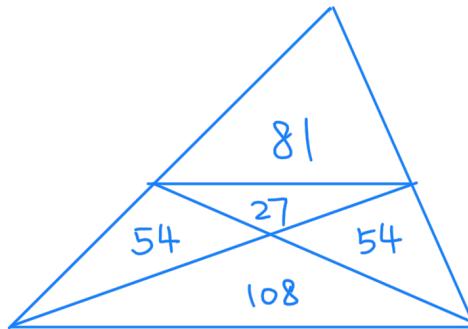
$$CP = 81 \quad MC = 117$$

4. $CP = 14$, $MC = 24$, $MB = 4$, What is the length of AM and AB?

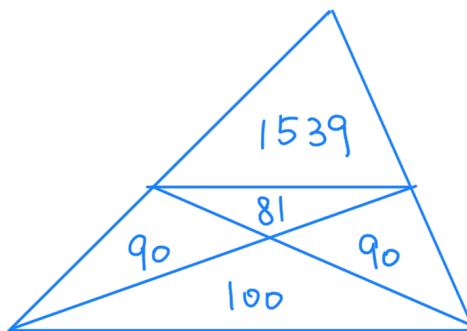
$$AM = 10$$

$$AB = 14$$

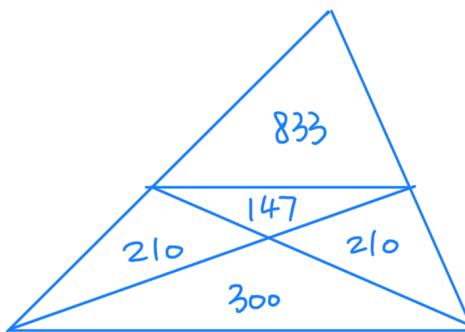
5. $AM = 12$, $MB = 12$, $[\triangle PNC] = 54$, What is the area of all the other triangles?



6. $[\triangle ABC] = 1900$, $[\triangle ABN] = 1710$, What is the area of all the other triangles?



7. $[\triangle PMN] = 147$, $[\triangle PBC] = 300$, What is the area of all the other triangles?



8. $BP = 45$, $NB = 72$, $AM = 27$, What is the length of AB and MB ?

$$AB = 5 \quad MB = 3$$

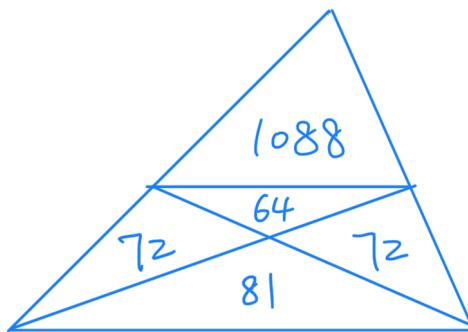
9. $AM = 40$, $MB = 10$, $CP = 50$, What is the length of MP and MC ?

$$MP = 40 \quad MC = 90$$

10. $BP = 54$, $NB = 66$, $AM = 12$, What is the length of AB and MB ?

$$AB = 54, MB = 42$$

11. $AN = 64$, $NC = 8$, $[\triangle PNC] = 72$, What is the area of all the other triangles?



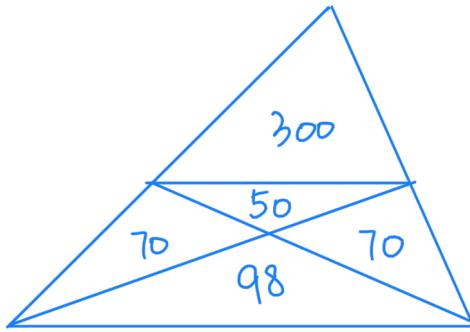
12. $AN = 3$, $AC = 18$, $BC = 18$, What is the length of MN ?

$$3$$

13. $MP = 81$, $CP = 90$, $AB = 90$, What is the length of AM and MB ?

$$AM = 81, MB = 9$$

14. $MN = 35$, $BC = 49$, $[\triangle MNC] = 120$, What is the area of all the other triangles?



15. $BP = 7$, $NB = 12$, $AC = 7$, What is the length of AN and NC ?

$$AN = 5, NC = 2$$

16. $AC = 45$, $NC = 9$, $NP = 36$, What is the length of BP and NB ?

$$BP = 45, NB = 81$$

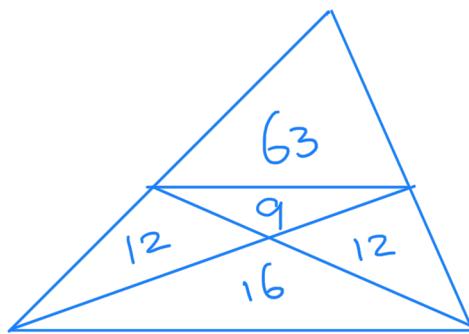
17. $BP = 14$, $NB = 24$, $AN = 10$, What is the length of AC and NC ?

$$AC = 14, NC = 4$$

18. $AM = 30$, $MB = 10$, $NB = 70$, What is the length of NP and BP ?

$$NP = 30 \quad BP = 40$$

19. $[\triangle PMN] = 9$, $[\triangle PMB] = 12$, What is the area of all the other triangles?



20. $AN = 16$, $NC = 40$, $AM = 16$, What is the length of AB and MB ?

$$AB = 56 \quad MB = 40$$

21. $MP = 20$, $CP = 45$, $BC = 45$, What is the length of MN ?

$$20$$

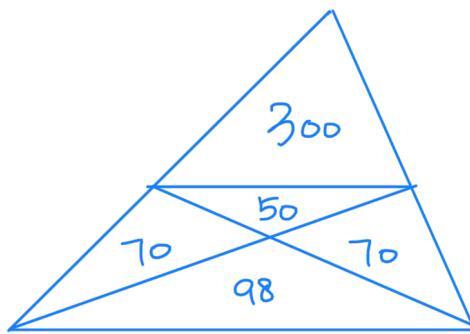
22. $MN = 8$, $BC = 20$, $AC = 20$, What is the length of AN and NC ?

$$AN = 8 \quad NC = 12$$

23. $AN = 18$, $AC = 36$, $BP = 36$, What is the length of NP and NB ?

$$NP = 18 \quad NB = 54$$

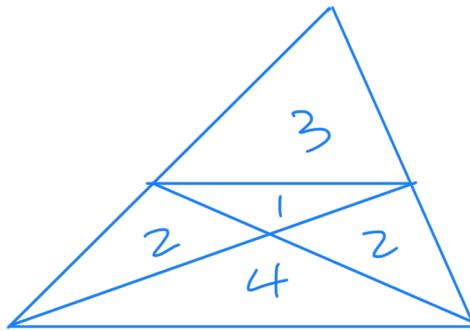
24. $[\triangle AMN] = 300$, $[\triangle ABN] = 420$, What is the area of all the other triangles?



25. $AN = 28$, $NC = 7$, $AB = 35$, What is the length of AM and MB ?

$$AM = 28 \quad MB = 7$$

26. $MN = 6$, $BC = 12$, $[\triangle MBC] = 6$, What is the area of all the other triangles?



27. $MN = 4$, $BC = 8$, $MP = 4$, What is the length of CP and MC ?

$$CP = 8 \quad MC = 12$$

28. $NP = 20$, $BP = 30$, $AB = 30$, What is the length of AM and MB ?

$$AM = 20, MB = 10$$

29. $AB = 72$, ~~AB~~ ^{MB} = 8, $CP = 72$, What is the length of MP and MC ?

$$MP = 64 \quad MC = 136$$

30. $MN = 4$, $BC = 16$, $CP = 16$, What is the length of MP and MC ?

$$MP = 4 \quad MC = 20$$

31. $MP = 3$, $MC = 7$, $AN = 3$, What is the length of AC and NC ?

$$AC = 4 \quad NC = 1$$

32. AB = 8, ~~AB~~ = 4, CP = 8, What is the length of MP and MC?

$$\frac{MB}{MP}$$

$$MP=4 \quad MC=12$$

33. MP = 2, MC = 8, AC = 6, What is the length of AN and NC?

$$AN=2 \quad NC=4$$

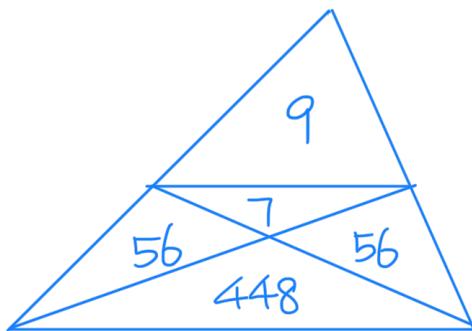
34. BP = 54, NB = 102, MP = 48, What is the length of CP and MC?

$$CP=54, MC=102$$

35. NP = 21, BP = 70, CP = 70, What is the length of MP and MC?

$$MP=21 \quad MC=91$$

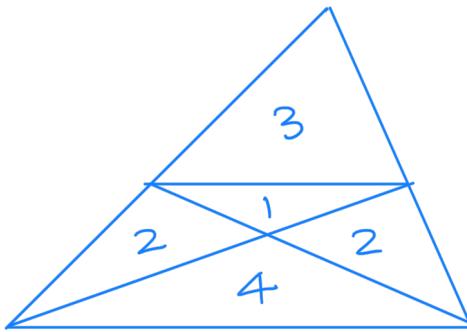
36. $[\triangle AMN] = 9$, $[\triangle ABN] = 72$, What is the area of all the other triangles?



37. $MP = 16$, $MC = 36$, $AN = 16$, What is the length of AC and NC ?

$$AC = 20, NC = 4$$

38. $[\triangle PBC] = 4$, $[\triangle MBC] = 6$, What is the area of all the other triangles?



39. $MP = 8$, $MC = 24$, $AM = 8$, What is the length of AB and MB ?

$$AB = 16 \quad MB = 8$$

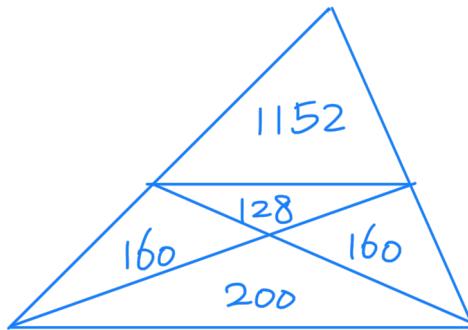
40. $MN = 10$, $BC = 25$, $MP = 10$, What is the length of CP and MC ?

$$CP = 25 \quad MC = 35$$

41. $MP = 4$, $MC = 16$, $NB = 16$, What is the length of NP and BP ?

$$NP = 4 \quad BP = 12$$

42. $BP = 20$, $NB = 36$, $[\triangle MNB] = 288$, What is the area of all the other triangles?



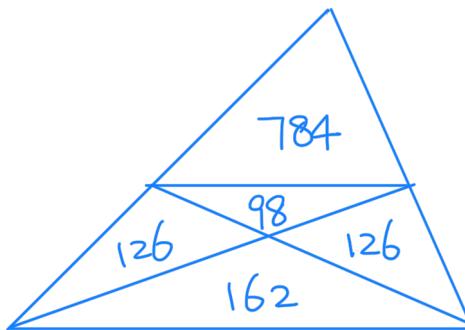
43. $AN = 2$, $AC = 7$, $AM = 2$, What is the length of AB and MB ?

$$AB = 7 \quad MB = 5$$

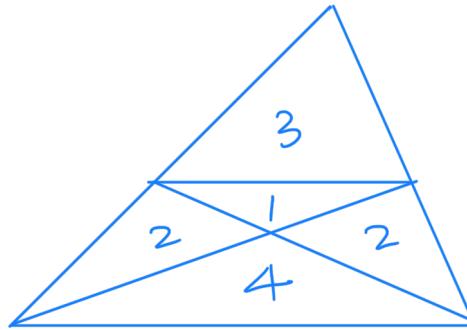
44. $MP = 24$, $MC = 80$, $BC = 56$, What is the length of MN ?

$$24$$

45. $MN = 56$, $BC = 72$, $[\triangle MNC] = 224$ What is the area of all the other triangles?



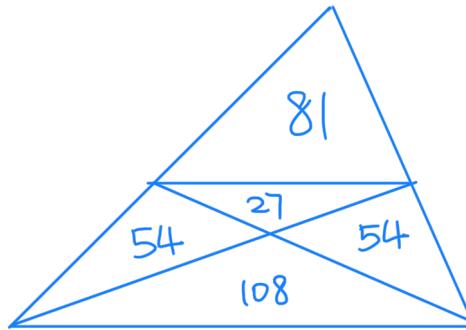
46. $[\triangle ABC] = 12$, $[\triangle ABN] = 6$, What is the area of all the other triangles?



47. $AN = 20$, $AC = 28$, $BP = 28$, What is the length of NP and NB?

$$NP = 20 \quad NB = 48$$

48. $CP = 18$, $MC = 27$, $[\triangle PNC] = 54$, What is the area of all the other triangles?



49. $AC = 90$, $NC = 18$, $NP = 72$, What is the length of BP and NB?

$$BP = 90 \quad NB = 162$$

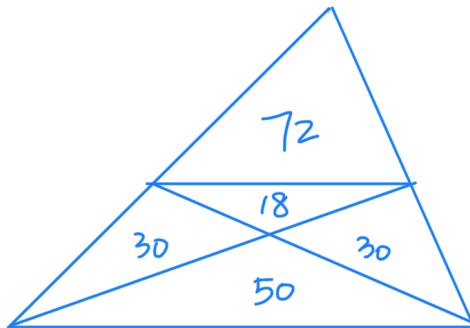
50. $MN = 42$, $BC = 63$, $AN = 42$, What is the length of AC and NC ?

$$AC = 63 \quad NC = 21$$

51. $NP = 8$, $BP = 32$, $AC = 32$, What is the length of AN and NC ?

$$AN = 8 \quad NC = 24$$

52. $AN = 21$, $NC = 14$, $[\triangle ABN] = 120$, What is the area of all the other triangles?



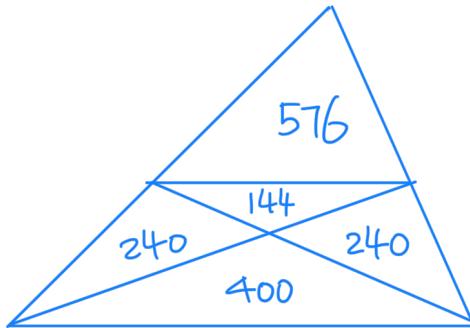
53. $NP = 3$, $BP = 10$, $AN = 3$, What is the length of AC and NC ?

$$AC = 10 \quad NC = 7$$

54. $AB = 21$, ~~AB~~ $= 18$, $NC = 18$, What is the length of AN and AC ?

$$AN = 3, \quad AC = 21$$

55. $AN = 54$, $NC = 36$, $[\triangle MNC] = 384$, What is the area of all the other triangles?



56. $NP = 8$, $BP = 12$, $AC = 12$, What is the length of AN and NC ?

$$AN = 8 \quad NC = 4$$

57. $MN = 14$, $BC = 49$, $NP = 14$, What is the length of BP and NB ?

$$BP = 49, \quad NB = 63$$

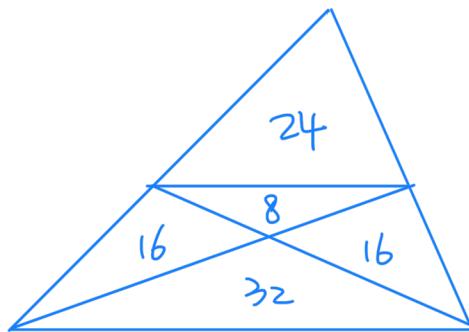
58. $AC = 45$, $NC = 9$, $MP = 36$, What is the length of CP and MC ?

$$CP = 45, \quad MC = 81$$

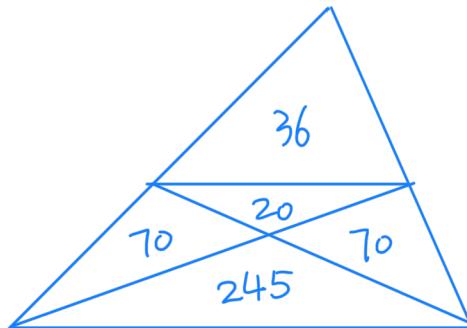
59. $MP = 6$, $CP = 60$, $MN = 6$, What is the length of BC ?

$$60$$

60. $[\triangle PMN] = 8$, $[\triangle PBC] = 32$, What is the area of all the other triangles?



61. $AN = 16$, $AC = 56$, $[\triangle MBC] = 315$, What is the area of all the other triangles?



62. $AC = 30$, $NC = 6$, $CP = 30$, What is the length of MP and MC?

$$MP = 24, MC = 54$$

63. $AM = 21$, $MB = 21$, $CP = 42$, What is the length of MP and MC?

$$MP = 21, MC = 63$$

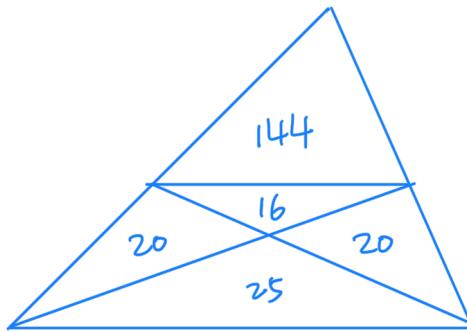
64. $BP = 18$, $NB = 24$, $MN = 6$, What is the length of BC ?

$$18$$

65. $NP = 4$, $BP = 24$, $NC = 20$, What is the length of AN and AC ?

$$AN = 4, AC = 24$$

66. $MN = 28$, $BC = 35$, $[\triangle PMB] = 20$, What is the area of all the other triangles?



67. $CP = 40$, $MC = 64$, $BC = 40$, What is the length of MN ?

$$24$$

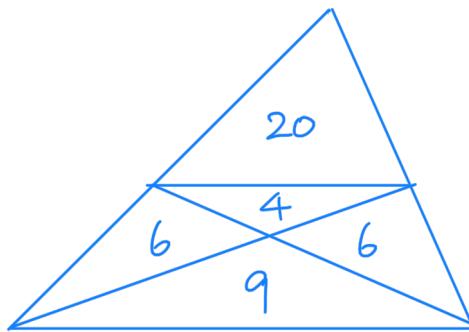
68. $MN = 18$, $BC = 36$, $CP = 36$, What is the length of MP and MC ?

$$MP = 18, MC = 54$$

69. $CP = 24$, $MC = 33$, $BP = 24$, What is the length of NP and NB ?

$$NP = 9 \quad NB = 33$$

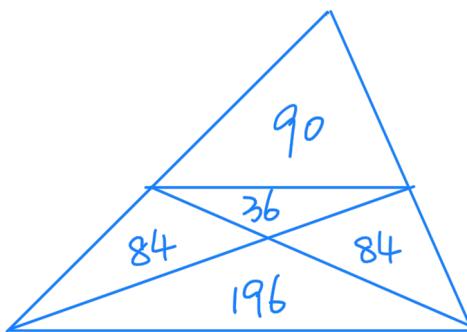
70. $NP = 20$, $NB = 50$, $[\triangle MNB] = 10$, What is the area of all the other triangles?



71. $MN = 6$, $BC = 10$, $MP = 6$, What is the length of CP and MC ?

$$CP = 10, MC = 16$$

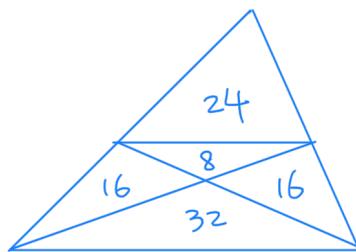
72. $MP = 9$, $CP = 21$, $[\triangle AMN] = 90$, What is the area of all the other triangles?



73. $MP = 3$, $MC = 15$, $AN = 3$, What is the length of AC and NC ?

$$AC = 12, NC = 9$$

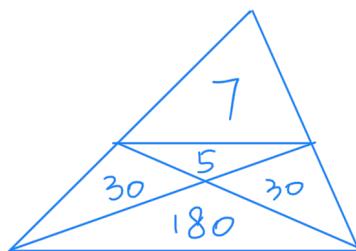
74. $[\triangle PMN] = 8$, $[\triangle PNC] = 16$, What is the area of all the other triangles?



75. $NP = 3$, $BP = 6$, $AB = 6$, What is the length of AM and MB ?

$$AM = 3, MB = 3$$

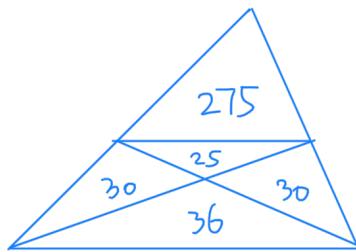
76. $[\triangle AMN] = 7$, $[\triangle ABN] = 42$, What is the area of all the other triangles?



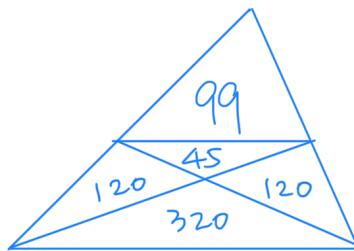
77. $AC = 6$, $NC = 3$, $MN = 3$, What is the length of BC ?

6

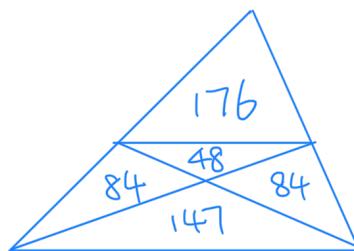
78. $NP = 40$, $NB = 88$, $[\triangle AMN] = 275$, What is the area of all the other triangles?



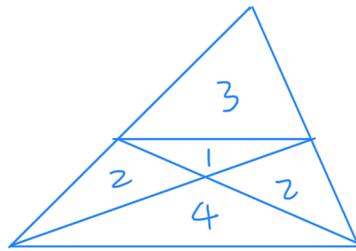
79. $[\triangle PBC] = 320$, $[\triangle MBC] = 440$, What is the area of all the other triangles?



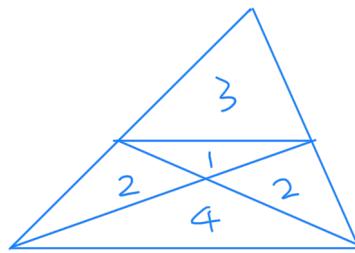
80. $[\triangle PMN] = 48$, $[\triangle PBC] = 147$, What is the area of all the other triangles?



81. $[\triangle PMN] = 1$, $[\triangle PNC] = 2$, What is the area of all the other triangles?



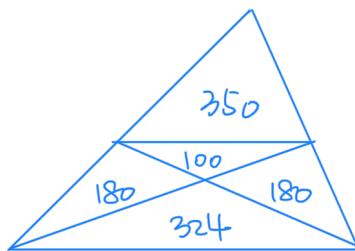
82. $AB = 10$, $\underline{AB} = 5$, $[\triangle PNC] = 2$, What is the area of all the other triangles?
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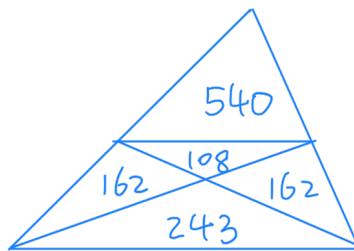
83. $BP = 12$, $NB = 18$, $MC = 18$, What is the length of MP and CP?

$$MP = 6, PC = 12$$

84. $[\triangle PMN] = 100$, $[\triangle PNC] = 180$, What is the area of all the other triangles?



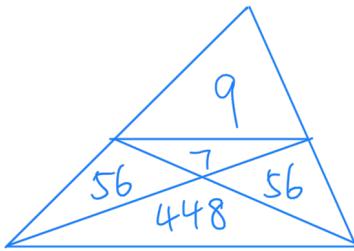
85. $NP = 18$, $NB = 45$, $[\triangle AMN] = 540$, What is the area of all the other triangles?



86. $NP = 30$, $BP = 42$, $NC = 12$, What is the length of AN and AC?

$$AN = 30 \quad AC = 42$$

87. $[\triangle ABC] = 576$, $[\triangle ABN] = 72$, What is the area of all the other triangles?



88. $AN = 9$, $NC = 6$, $NP = 9$, What is the length of BP and NB ?

$$BP = 15, BN = 24$$

89. $AM = 45$, $AB = 63$, $BC = 63$, What is the length of MN ?

$$45$$

90. $MP = 9$, $MC = 36$, $MB = 18$, What is the length of AM and AB ?

$$AM = 9, AB = 27$$

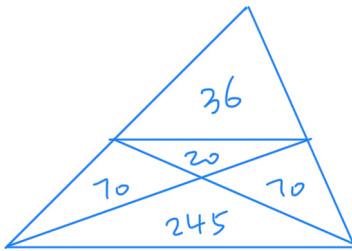
91. $AM = 4$, $AB = 12$, $CP = 12$, What is the length of MP and MC ?

$$MP = 4, MC = 16$$

92. $MP = 6$, $CP = 10$, $MN = 6$, What is the length of BC ?

$$10$$

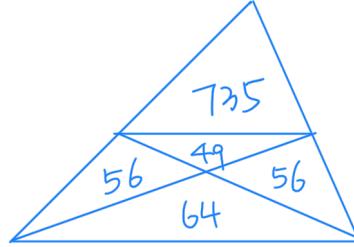
93. $AB = 56$, $MB = 40$, $[\triangle ABC] = 441$, What is the area of all the other triangles?



94. $CP = 90$, $MC = 171$, $AB = 90$, What is the length of AM and MB ?

$$AM = 81, MB = 9$$

95. $[\triangle PMN] = 49$, $[\triangle PMB] = 56$, What is the area of all the other triangles?



96. $AN = 16$, $NC = 40$, $NP = 16$, What is the length of BP and NB ?

$$BP = 56, BN = 72$$

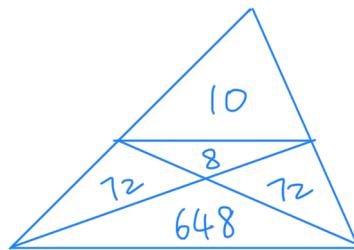
97. $NP = 28$, $NB = 68$, $AB = 40$, What is the length of AM and MB ?

$$AM = 28, MB = 12$$

98. $MN = 28$, $BC = 70$, $AM = 28$, What is the length of AB and MB ?

$$AB = 70, MB = 42$$

99. $MN = 8$, $BC = 72$, $[\triangle ABN] = 90$, What is the area of all the other triangles?



100. $AN = 16$, $NC = 40$, $[\triangle MNB] = 90$, What is the area of all the other triangles?

