

Ejercicios 2 Resolver como si el año actual fuera 2016

Tablas de mortalidad de las generaciones 77,80,89 . *Tablas preparadas para Caest , al final*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **x** | **lx (77)** | **lx(80)** | **lx (89)** | **x** | **lx (77)** | **lx(80)** | **lx (89)** | **x** | **lx (77)** | **lx(80)** | **lx (89)** |
| **0** | 10000 | 10000 | 10000 | **33** | 9913 | 9771 | 9842 | **66** | 9770 | 9161 | 9465 |
| **1** | 9967 | 9942 | 9954 | **34** | 9911 | 9763 | 9837 | **67** | 9759 | 9113 | 9436 |
| **2** | 9964 | 9936 | 9950 | **35** | 9909 | 9755 | 9832 | **68** | 9748 | 9061 | 9404 |
| **3** | 9962 | 9933 | 9947 | **36** | 9907 | 9747 | 9827 | **69** | 9736 | 9005 | 9370 |
| **4** | 9960 | 9930 | 9945 | **37** | 9905 | 9740 | 9822 | **70** | 9722 | 8945 | 9333 |
| **5** | 9958 | 9927 | 9942 | **38** | 9903 | 9733 | 9818 | **71** | 9707 | 8882 | 9294 |
| **6** | 9957 | 9924 | 9940 | **39** | 9901 | 9726 | 9813 | **72** | 9691 | 8814 | 9252 |
| **7** | 9956 | 9922 | 9939 | **40** | 9899 | 9718 | 9808 | **73** | 9673 | 8740 | 9206 |
| **8** | 9955 | 9920 | 9937 | **41** | 9897 | 9710 | 9803 | **74** | 9653 | 8660 | 9156 |
| **9** | 9954 | 9918 | 9936 | **42** | 9895 | 9701 | 9798 | **75** | 9631 | 8573 | 9102 |
| **10** | 9953 | 9916 | 9934 | **43** | 9893 | 9692 | 9792 | **76** | 9606 | 8479 | 9042 |
| **11** | 9952 | 9914 | 9933 | **44** | 9890 | 9682 | 9786 | **77** | 9578 | 8379 | 8978 |
| **12** | 9951 | 9912 | 9931 | **45** | 9887 | 9672 | 9779 | **78** | 9547 | 8272 | 8909 |
| **13** | 9950 | 9910 | 9930 | **46** | 9884 | 9661 | 9772 | **79** | 9513 | 8158 | 8835 |
| **14** | 9949 | 9908 | 9928 | **47** | 9881 | 9650 | 9765 | **80** | 9475 | 8036 | 8755 |
| **15** | 9948 | 9905 | 9926 | **48** | 9878 | 9638 | 9758 | **81** | 9431 | 7906 | 8668 |
| **16** | 9947 | 9902 | 9924 | **49** | 9875 | 9626 | 9750 | **82** | 9378 | 7766 | 8572 |
| **17** | 9945 | 9898 | 9921 | **50** | 9871 | 9612 | 9741 | **83** | 9316 | 7617 | 8466 |
| **18** | 9943 | 9892 | 9917 | **51** | 9867 | 9597 | 9732 | **84** | 9242 | 7461 | 8351 |
| **19** | 9941 | 9886 | 9913 | **52** | 9863 | 9580 | 9721 | **85** | 9152 | 7300 | 8226 |
| **20** | 9939 | 9879 | 9909 | **53** | 9859 | 9562 | 9710 | **86** | 9045 | 7130 | 8087 |
| **21** | 9937 | 9871 | 9904 | **54** | 9854 | 9541 | 9697 | **87** | 8919 | 6949 | 7934 |
| **22** | 9935 | 9863 | 9899 | **55** | 9849 | 9519 | 9684 | **88** | 8770 | 6761 | 7765 |
| **23** | 9933 | 9855 | 9894 | **56** | 9844 | 9496 | 9670 | **89** | 8597 | 6565 | 7581 |
| **24** | 9931 | 9847 | 9889 | **57** | 9839 | 9472 | 9655 | **90** | 8394 | 6359 | 7376 |
| **25** | 9929 | 9838 | 9883 | **58** | 9833 | 9446 | 9639 | **91** | 8156 | 6143 | 7149 |
| **26** | 9927 | 9830 | 9878 | **59** | 9827 | 9418 | 9622 | **92** | 7902 | 5919 | 6910 |
| **27** | 9925 | 9822 | 9873 | **60** | 9820 | 9389 | 9604 | **93** | 7594 | 5651 | 6622 |
| **28** | 9923 | 9813 | 9868 | **61** | 9813 | 9357 | 9585 | **94** | 7224 | 5335 | 6279 |
| **29** | 9921 | 9804 | 9862 | **62** | 9805 | 9323 | 9564 | **95** | 6780 | 4966 | 5873 |
| **30** | 9919 | 9795 | 9857 | **63** | 9797 | 9287 | 9542 | **96** | 6255 | 4543 | 5399 |
| **31** | 9917 | 9787 | 9852 | **64** | 9789 | 9249 | 9519 | **97** | 5645 | 4065 | 4855 |
| **32** | 9915 | 9779 | 9847 | **65** | 9780 | 9207 | 9493 | **98** | 4953 | 3536 | 4244 |
|  |  |  |  |  |  |  |  | **99** | 4191 | 2965 | 3578 |

Calcular

1) calcular la probabilidad de que una grupo formado, este año (2016), por tres personas de las generaciones de 1977, 1980 y 1989 sobrevivan los tres más de 10 años.

2) en el caso del mismo grupo calcular la probabilidad de que a los 15 años muera al menos 1 de los tres.

3) calcular la probabilidad de que muera el de más edad pero no los otros antes de 20 años

4) calcular la probabilidad de que mueran exactamente 2 antes de 25 años

5) calcular la probabilidad de que en el año 2050 viva alguno

6) calcular la probabilidad que el grupo se disuelva pero no se extinga antes de esa fecha(2050)

7) calcular la probabilidad de que se disuelva antes de que alguno de ellos alcance los 65 años

8) calcular la probabilidad de que no se extinga en 30 años

9)De un grupo de cuatro cabezas de edades x,y,z,v se conocen los actuarianos correspondientes a un periodo de 15 años:

Z=3.6170

Z2=4.9061

Z3=2.9576

Z4=0.6686

a)calcular la probabilidad de que sobrevivan alguno de ellos ,al menos 1

b) probabilidad de que sobrevivan exactamente 2

c) probabilidad de que sobrevivan exactamente 3

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tablas Caest 1.7

|  |  |  |  |
| --- | --- | --- | --- |
| **x** | **lx (77)** | **lx(80)** | **lx (89)** |
| **0** | 10000 | 10000 | 10000 |
| **1** | 9967 | 9942 | 9954 |
| **2** | 9964 | 9936 | 9950 |
| **3** | 9962 | 9933 | 9947 |
| **4** | 9960 | 9930 | 9945 |
| **5** | 9958 | 9927 | 9942 |
| **6** | 9957 | 9924 | 9940 |
| **7** | 9956 | 9922 | 9939 |
| **8** | 9955 | 9920 | 9937 |
| **9** | 9954 | 9918 | 9936 |
| **10** | 9953 | 9916 | 9934 |
| **11** | 9952 | 9914 | 9933 |
| **12** | 9951 | 9912 | 9931 |
| **13** | 9950 | 9910 | 9930 |
| **14** | 9949 | 9908 | 9928 |
| **15** | 9948 | 9905 | 9926 |
| **16** | 9947 | 9902 | 9924 |
| **17** | 9945 | 9898 | 9921 |
| **18** | 9943 | 9892 | 9917 |
| **19** | 9941 | 9886 | 9913 |
| **20** | 9939 | 9879 | 9909 |
| **21** | 9937 | 9871 | 9904 |
| **22** | 9935 | 9863 | 9899 |
| **23** | 9933 | 9855 | 9894 |
| **24** | 9931 | 9847 | 9889 |
| **25** | 9929 | 9838 | 9883 |
| **26** | 9927 | 9830 | 9878 |
| **27** | 9925 | 9822 | 9873 |
| **28** | 9923 | 9813 | 9868 |
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| **32** | 9915 | 9779 | 9847 |
| **33** | 9913 | 9771 | 9842 |
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| **36** | 9907 | 9747 | 9827 |
| **37** | 9905 | 9740 | 9822 |
| **38** | 9903 | 9733 | 9818 |
| **39** | 9901 | 9726 | 9813 |
| **40** | 9899 | 9718 | 9808 |
| **41** | 9897 | 9710 | 9803 |
| **42** | 9895 | 9701 | 9798 |
| **43** | 9893 | 9692 | 9792 |
| **44** | 9890 | 9682 | 9786 |
| **45** | 9887 | 9672 | 9779 |
| **46** | 9884 | 9661 | 9772 |
| **47** | 9881 | 9650 | 9765 |
| **48** | 9878 | 9638 | 9758 |
| **49** | 9875 | 9626 | 9750 |
| **50** | 9871 | 9612 | 9741 |
| **51** | 9867 | 9597 | 9732 |
| **52** | 9863 | 9580 | 9721 |
| **53** | 9859 | 9562 | 9710 |
| **54** | 9854 | 9541 | 9697 |
| **55** | 9849 | 9519 | 9684 |
| **56** | 9844 | 9496 | 9670 |
| **57** | 9839 | 9472 | 9655 |
| **58** | 9833 | 9446 | 9639 |
| **59** | 9827 | 9418 | 9622 |
| **60** | 9820 | 9389 | 9604 |
| **61** | 9813 | 9357 | 9585 |
| **62** | 9805 | 9323 | 9564 |
| **63** | 9797 | 9287 | 9542 |
| **64** | 9789 | 9249 | 9519 |
| **65** | 9780 | 9207 | 9493 |
| **66** | 9770 | 9161 | 9465 |
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| **69** | 9736 | 9005 | 9370 |
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| **78** | 9547 | 8272 | 8909 |
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| **80** | 9475 | 8036 | 8755 |
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| **82** | 9378 | 7766 | 8572 |
| **83** | 9316 | 7617 | 8466 |
| **84** | 9242 | 7461 | 8351 |
| **85** | 9152 | 7300 | 8226 |
| **86** | 9045 | 7130 | 8087 |
| **87** | 8919 | 6949 | 7934 |
| **88** | 8770 | 6761 | 7765 |
| **89** | 8597 | 6565 | 7581 |
| **90** | 8394 | 6359 | 7376 |
| **91** | 8156 | 6143 | 7149 |
| **92** | 7902 | 5919 | 6910 |
| **93** | 7594 | 5651 | 6622 |
| **94** | 7224 | 5335 | 6279 |
| **95** | 6780 | 4966 | 5873 |
| **96** | 6255 | 4543 | 5399 |
| **97** | 5645 | 4065 | 4855 |
| **98** | 4953 | 3536 | 4244 |
| **99** | 4191 | 2965 | 3578 |