Pilot Estimation Mathematics Test (QUIZ DOC)

In your actual test you will have about six minutes to answer about 28 questions. This is about 13 seconds per question.

Use these questions to both work on your speed and accuracy in these type of questions.

QUIZ

1. 6015 + 9647
   a) 15662   b) 16052   c) 1562   d)16662

2. 981 + 12468
   a) 13090   b) 13500   c) 13449   d) 13949

3. 5836 + 2511 + 179 + 1234
   a) 10800   b) 8120   c) 11680   d) 9760

4. 11.57 + 16.9 + 25.3 + 18.51
   a) 69.3   b) 71.39   c) 72.28   d) 83.58

5. 5073 + 1010 + 3126
   a) 8907   b) 9209   c) 9559   d) 9889

6. 896 + 321 – 216
   a) 1001   b) 2009   c) 361   d) 1511

7. 1072 – 280 – 315
   a) 399   b) 477   c) 400   d) 527

8. 5009 – 2089 – 1019
   a) 2009   b) 871   c) 2919   d) 1901

9. 9500 – 2380 + 1716
   a) 8836   b) 5636   c) 7086   d) 10266

10. 997 – 623 – 354
    a) 41   b) 150   c) 20   d) 37

11. 567 – 28 -65
    a) 519   b) 474   c) 380   d) 414

12. 7206 – 5435 – 1463
    a) 1408   b) 1088   c) 308   d) 608

13. 1872 x 52
    a) 97344   b) 118744   c) 93864   d) 121324

14. 296 x 463
    a) 162038   b) 125838   c) 137048   d) 14658

15. 737 x 52.14
    a) 43117   b) 32742   c) 38427   d) 851760

16. 1820 x 468
    a) 892138   b) 1036460   c) 92180   d) 851760

17. 542 x 18.5
    a) 10346.5   b) 10027   c) 8273   d) 1074

18. 41 x 786
    a) 32226   b) 36286   c) 31638   d) 28326

19. $\dfrac{9954}{79}$

    a) 216   b) 126   c) 76   d) 186

20. $\dfrac{875}{25}$

    a) 35   b) 45   c) 58   d) 15

21. $\dfrac{13908}{38}$

    a) 285   b) 169   c) 421   d) 366

22. $\dfrac{14238}{6}$

    a) 2373   b) 1823   c) 3413   d) 2963

23. $\dfrac{1537}{12}$

    a) 728   b) 388   c) 128   d) 78

24. $\dfrac{1297.48}{32.6}$

    a) 412.8   b) 396.8   c) 63.8   d) 39.8

25. 32% of 1825

    a) 794   b) 584   c) 344   d) 1024

26. 89% of 6200

    a) 5518   b) 5890   c) 5014   d) 6008

27. 27% of 8000
   a) 2160   b) 2815   c) 1620   d) 3010

28. 68% of 3517
   a) 2967   b) 3125   c) 1872   d) 2391

29. 14.8% of 2047
   a) 184   b) 261   c) 303   d) 412

30. 8899 x 0.99
   a) 8810.01   b) 89099.91   c) 8982.81   d) 800.91

31. 7777 x 0.11
   a) 7.77   b) 886   c) 752   d) 855

32. 1989 x 0.09
   a) 136   b) 179   c) 204   d) 219

33. 49919 x 0.001
   a) 49.92   b) 499.2   c) 4.99   d) 4991.9

34. 4004 x 0.81
   a) 318   b) 2836   c) 3243   d) 3844

35. $0.512 \times 38 : \dfrac{1}{5}$

   a) 92   b) 73   c) 142   d) 13

36. $0.72 \times 19 : \dfrac{1}{9}$

   a) 17   b) 35   c) 86   d) 123

37. $2.16 \times 0.5 : \dfrac{3}{7}$

   a) 2.5   b) 1   c) 0.7   d) 3.6

38. $28.59 \times 4.5 : \dfrac{4}{5}$

   a) 122   b) 161   c) 32   d) 197

39. $0.783 \times 81 : \dfrac{1}{6}$

   a) 168   b) 296   c) 385   d) 432

40. $0.25 \times 17 : \dfrac{2}{8}$

   a) 15   b) 16   c) 17   d) 18

41. $0.375 \times 6.9 : \dfrac{3}{8}$

    a) 5.4   b) 6.9   c) 8.2   d) 9.1

42. $0.6 \times 60 : \dfrac{6}{10}$

    a) 6   b) 6.6   c) 60   d) 66.66

43. $\dfrac{1}{5} \times 16 : 0.2$

    a) 10   b) 14   c) 16   d) 20

44. $\dfrac{5}{8} \times 97 \times 0.625$

    a) 83   b) 97   c) 101   d) 113

45. $\dfrac{6}{16} : 0.375 \times 55$

a) 15   b) 33   c) 49   d) 55

46. $\dfrac{5}{2} \times 1024 : 2.5$

a) 1024   b) 824   c) 624   d) 124

47. $\dfrac{9}{11}$ x 1074

a) 616   b) 737   c) 878   d) 989

48. $\dfrac{5}{12}$ x 14396

a) 5998   b) 5126   c) 7312   d) 4893

49. $\dfrac{5}{44}$ x 89501

a) 10170   b) 8526   c) 16324   d) 26312

50. $\dfrac{13}{8}$ x 1511

a)   1255   b) 2455   c) 25565   d) 3255

51. $\dfrac{2}{5}$ x 10801

a)   2860   b) 6018   c) 5370   d) 4320

52. $\dfrac{3}{10}$ x 8989

a)   2099   b) 2696   c) 3099   d) 3696

53. $\dfrac{5}{6} : \dfrac{25}{6}$ x 481

a) 53   b) 96   c) 127   d) 182

54. $\dfrac{9}{4}$ x $\dfrac{4}{81}$ x 236

a) 26   b) 58   c) 66   d) 82

55. $\dfrac{3}{7}$ x $\dfrac{28}{21}$ x 193

a) 72   b) 46   c) 225   d) 110

56. $\dfrac{8}{33}$ x $\dfrac{3}{64}$ x 818

a) 9   b) 81   c) 65   d) 147

END UNTIMED QUIZ 1

QUIZ ANSWERS AND EXPLANATIONS

1. 6015 + 9647
   b) 15662   b) 16052   c) 1562   d)16662

Answer: a) 15662

Front estimate the two numbers (in this case, round up the numbers to the thousands):

6015 ≈ 6000

9647 ≈ 9000

Add the two numbers:

6000 + 9000 = 15000

Therefore, the result will be somewhere over 15000.

Taking a quick look at the hundreds, we notice that we have about 6 or 7 hundreds, so the result will go around 15600 – 15700. The closest option is a), 15662.

2. 981 + 12468
   b) 13090   b) 13500   c) 13449   d) 13949

Answer: c) 13449

Approximate the numbers to the closest round numbers:

981 ≈ 1000

12468 ≈ 12500

Add the two numbers:

1000 + 12500 = 13500

Because we rounded the numbers by addition, we must subtract from the result. So the answer will be just below 13500.

Also, because the last digits add up to 9 (1 + 8 = 9), the result will end in 9. So the answer is c), 13449.

3. 5836 + 2511 + 179 + 1234
   b) 10800   b) 8120   c) 11680   d) 9760

Answer: d) 9760

We can go around this long addition in several ways. The most important thing is to round the numbers and then pair them in order to add them up easily.

$5836 \approx 6000$

$2511 \approx 2500$

$179 \approx 200$

$1234 \approx 1200$

The addition can also be approximate:

$1200 + 200 \approx 1500$

$6000 + 2500 + 1500 = 10000$

Because we added to the numbers to round them up, we must subtract from the result, so that it will be just under 10000. The closest number to our estimate is d), 9760.

(Alternatively, you can round all numbers to the hundreds:

$5836 \approx 5800$

$2511 \approx 2500$

$179 \approx 200$

$1234 \approx 1200$

5800 can be grouped with 1200, because 800 + 200 = 1000, so 5800 + 1200 = 7000.

7000 + 2500 + 200 = 9700.

We choose the option closest to this estimate, which is d) 9760.

4. 11.57 + 16.9 + 25.3 + 18.51
   b) 69.3   b) 71.39   c) 72.28   d) 83.58

Answer: c) 72.28

First of all, remember that .9 = .90.

Now round the numbers so that you can group and add them easily:

$11.57 \approx 12$

$16.9 \approx 15$

$25.3 \approx 25$

$18.52 \approx 18$

Associate the numbers so as to obtain round results:

12 + 18 = 30

15 + 25 = 40

30 + 40 = 70, so the result must be close to 70, but a bit bigger. (We must add to 70 because we mostly subtracted when we rounded the numbers.)

Options b) and c) are both close, so we check the last digit:

7 + 0 + 0 + 1 = 8

So the answer must be c) 72.28, because its last digit is 8.

5. 5073 + 1010 + 3126
   b) 8907   b) 9209   c) 9559   d) 9889

Answer: b) 92909

Front estimate the numbers:

$5073 \approx 5000$

$1010 \approx 1000$

$3126 \approx 3000$

Add up the numbers:

500 + 1000 + 3000 = 9000.

Because we estimated by subtraction, we must add to the result, so the answer will be a little bigger than 9000. By how much?

$126 + 73 \approx 120 + 80 = 200$

The closest option is b) 9209.

6. $896 + 321 - 216$
   b) 1001   b) 2009   c) 361   d) 1511

Answer: a) 1001

Estimate to the closest hundreds:

$896 \approx 900$

$321 \approx 300$

$216 \approx 200$

$900 + 300 - 200 = 1000$

The closest option is a) 1001.

Observation: When we have an operation that requires both addition and subtraction, we cannot add to the result because we rounded the numbers by subtraction, or subtract from the result because we rounded by addition. That works only for addition and multiplication.

7. $1072 - 280 - 315$
   b) 399   b) 477   c) 400   d) 527

Answer: b) 477

Notice that 280 and 315 make around 600 together.

We can think of 1072 as "one thousand and something". Therefore, "one thousand and something" – 600 = "four hundred and something". This leads us towards option b) 477.

8. 5009 – 2089 – 1019
    b) 2009   b) 871   c) 2919   d) 1901

Answer: d) 1901

Round the numbers by fronting:

5009 ≈ 5000

2089 ≈ 2000

1019 ≈ 1000

Now subtract them:

5000 – 2000 – 1000 = 2000

Do not rush and choose option a) 2009, because there are still a few tens to subtract from 2000, so the result will be under, not above 2000, which leads us towards option d) 1901.

If we want to be more precise, though, we can estimate the amount to be subtracted:

89 + 19 ≈ 100, so the result will be around

2000 – 100 = 1900.

Therefore, the correct answer is d) 1901.

9. 9500 – 2380 + 1716
    b) 8836   b) 5636   c) 7086   d) 10266

Answer: a) 8836

Round the numbers to the hundreds so that you can work with them easily:

9500 is good as it is

2380 ≈ 2500

1716 ≈ 1500

9500 – 2500 = 7000

7000 + 1500 = 8500

The closest option is a) 8836.

10. 997 – 623 – 354

    b) 41   b) 150   c) 20   d) 37

Answer: c) 20

We can easily round up 997:

$997 \approx 1000$

Notice that the numbers to be subtracted, 623 and 354, make roughly 1000 together.

1000 – 1000 = 0, which means that the exact result will be a very small number. This points towards option c) 20, but if we want to be sure it's not a) 41 or d) 37, we can also check the last digit.

7 – 3 – 4 = 0, so the last digit of the final result will be 0. The answer is c) 20.

11. 567 – 28 -65

    b) 519   b) 474   c) 380   d) 414

Answer: b) 474

The easiest way to solve this question is to pair the first and third numbers.

$567 - 65 \approx 500$

$28 \approx 30$

500 – 30 = 470, so the final answer will revolve around this value.

The closest option is b) 474.

12. 7206 – 5435 – 1463

    b) 1408   b) 1088   c) 308   d) 608

Answer: c) 308

The two numbers that need to be subtracted make around 7000 together.

$5435 + 1436 \approx 5500 + 1500 = 7000$

7206 – 7000 = 206

The closest option to this estimate is c) 308.

13. 1872 x 52

    b) 97344   b) 118744   c) 93864   d) 121324

Answer: a) 97344

Round up the factors:

$1872 \approx 2000$

$52 \approx 50$

$2000 \times 50 = 10000$

The closest option to this estimate is a) 97344.

14. 296 x 463

    b) 162038   b) 125838   c) 137048   d) 14658

Answer: c) 137048

Round up the factors:

$296 \approx 300$

$463 \approx 500$

$300 \times 500 = 150000$

Because we rounded the numbers by addition, the result will be lower than the estimate. The closest option to 150000 that is also lower than it is c) 137048.

Observation: Don't be fooled by option d), which starts with 14, so you might think it's close to out estimated result. 150000 is a six-figure number, while 14658 only has five digits, so it is ten times smaller than the result we are looking for.

15. 737 x 52.14

    b) 43117   b) 32742   c) 38427   d) 851760

Answer: c) 38427

Round the numbers by fronting:

737 ≈ 700

52.14 ≈ 50

700 x 50 = 35000

Because we rounded the numbers by subtraction (through fronting), we will need to add to the result. So the final answer will be slightly higher than 35000. The closest option is c) 38427.

16. 1820 x 468

    b) 892138   b) 1036460   c) 92180   d) 851760

Answer: d) 851760

Let us round up the numbers:

1820 ≈ 2000

468 ≈ 500

2000 x 500 = 1000000

Because we rounded the factors through addition, we will subtract from the estimated result in order to get the correct answer. Therefore, the answer will be under 1,000,000.

Options a) and d) are both close, but because one of the factors ends in 0, the result will also end in 0. So the correct answer can only be d) 851760.

17. 542 x 18.5

    b) 10346.5   b) 10027   c) 8273   d) 1074

Answer: b) 10027

First, round the numbers:

$542 \approx 500$

$18.5 \approx 20$

500 x 20 = 10000, so the result will be around this value.

Options a) and b) are both close to 10000, but because 18.5 was multiplied by an even number, the result will be a whole number. Therefore, a) 1034.5 cannot be the answer.

18. 41 x 786

    b) 32226   b) 36286   c) 31638   d) 28326

Answer: a) 32226

Round the numbers:

$41 \approx 40$

$786 \approx 800$

Now multiply the estimates:

40 x 800 = 32000

Options a) and c) are close to this estimate. In order to make sure what the correct answer is, we check the last digit:

1 x 6 = 6, so the result must end in 6.

Therefore, the answer is a) 32226.

19. $\dfrac{9954}{79}$

    a) 216   b) 126   c) 76   d) 186

Answer: b) 126

Round the numbers:

$9954 \approx 10000$

$79 \approx 80$

Now divide the estimates:

$10000 : 80 \approx 120$ (Considering that 8 x 10 = 80, we estimate that 8 x 12 will be close to 100)

The closest option to 120 is b) 126.

20. $\dfrac{875}{25}$

    b) 35   b) 45   c) 58   d) 15

Answer: a) 35

We can estimate the numbers as follows:

$875 \approx 900$

$25 \approx 30$

Now divide the estimates:

$900 : 30 = 30$. The closest option to 30 is a) 35.

Another way to solve this question, for fast thinkers, is to consider that:

875 = 100 x 8 + 75

100 : 25 = 4

4 x 8 = 32

75 : 25 = 3

32 + 3 = 35, and this way, we would obtain directly the exact result.

21. $\dfrac{13908}{38}$

    b) 285   b) 169   c) 421   d) 366

Answer: d) 366

Round the numbers:

$13908 \approx 14000$

$38 \approx 40$

$14000 : 40 = 1400 : 4$

We know that 4 x 3 = 12 and 4 x 4 = 16, so in order to obtain 14, which is halfway between 12 and 16, we would have to multiply 4 by 3.5.

Therefore, our estimated answer is 350, which is closest to answer d) 366.

22. $\dfrac{14238}{6}$

    b) 2373   b) 1823   c) 3413   d) 2963

Answer: a) 2373

We can round 14238 down to 14000.

Since 14000 : 7 = 2000, then 14000 : 6 will be a little over 2000. The closest option is a) 2373.

23. $\dfrac{1537}{12}$

    b) 728   b) 388   c) 128   d) 78

Answer: c) 128

Round the numbers:

$1537 \approx 1500$

$10 < 12 < 15$

We can quickly calculate that

$1500 : 10 = 150$

$1500 : 15 = 100$

So our answer will be comprised between these two limits: 100 and 150. The only option that goes inside the required interval is c) 128.

24. $\dfrac{1297.48}{32.6}$

    b) 412.8   b) 396.8   c) 63.8   d) 39.8

Answer: d) 39.8

When we round number 1287.48, we might be tempted to round it to 1300, because it is closer. But 1300 is difficult to divide by 30 (32.6 ≈ 30), so it would be a choice that would complicate things. So it is better to estimate 1297.48 by fronting.

1287.48 ≈ 1200

32.6 ≈ 30

1200 : 30 = 40

The closest option is d) 39.8.

25. 32% of 1825

    b) 794   b) 584   c) 344   d) 1024

Answer: b) 584

32% ≈ 33% (a third).

If we round 1825 down to 1800, we can easily calculate that a third of 1800 is 600.

1800 : 3 = 600 because 18 : 3 = 6

The closest option to 600 is b) 584.

26. 89% of 6200

    b) 5518   b) 5890   c) 5014   d) 6008

Answer: a) 5518

89% ≈ 90%

6200 ≈ 6000

10% of 6000 is 600, so 90% of 6000 is 6000 − 600 = 5400

The option that comes closest to this estimate is a) 5518.

27. 27% of 8000

   b) 2160   b) 2815   c) 1620   d) 3010

Answer: a) 2160

27% ≈ 25% (a quarter)

25% of 8000 is 2000.

Therefore, the answer must be a) 2160, because it is closest to 2000.

28. 68% of 3517

   b) 2967   b) 3125   c) 1872   d) 2391

Answer: d) 3291

It helps us to estimate 68% to 75%, or to think about it as a half and almost a quarter more.

3517 ≈ 3500

Half of 3500 ≈ 1700.

Quarter of 3500 ≈ 800

Therefore, 75% of 3517 ≈ 2500.

The closest option to 2500 is d) 2391.

The closest option to 2500 is d) 2391.

29. 14.8% of 2047

    b) 184   b) 261   c) 303   d) 412

Answer: c) 303

$14.8\% \approx 15\%$

15% means 10% plus half of that amount (5%).

$2047 \approx 2000$

10% of 2000 = 200

5% of 2000 = 100

So 15% of 2000 = 300

The closest option to 300 is C) 303.

30. 8899 x 0.99

    b) 8810.01   b) 89099.91   c) 8982.81   d) 800.91

Answer: a) 8810.01

0.99 is almost 1, which is an identity element in multiplication. That is, 8899 x 1 = 8899.

Therefore, the result of the multiplication will be very close to the original number. But because 0.99 is smaller than 1, then the result will also be smaller than the original number.

The number that is close to 8899, but smaller than it, is a) 8810.01.

31. 7777 x 0.11

    b) 7.77   b) 886   c) 752   d) 855

Answer: d) 855

0.11 is a little more than 0.1, or 10%

10% of 7777 ≈ 777

The result should be a little higher than 777, so the answer is d) 855.

32. 1989 x 0.09

    b) 136   b) 179   c) 204   d) 219

Answer: b) 179

0.09 is almost 0.1, or 10%

10% of 1989 ≈ 198

Because 0.09 is close but smaller than 0.1, the exact result we are looking for should also be close but smaller than 198. The option that matches these criteria is b) 179.

33. 49919 x 0.001

    b) 49.92   b) 499.2   c) 4.99   d) 4991.9

Answer: a) 49.92

When we multiply by numbers such as 0.1, 0.001, 0.001 etc., all we have to do is move the decimal point to the left in the original number by as many digits as we have to the right of the decimal point in the 0.1-type number.

For example,   49919 x 0.1 = 4991.9

                 49919 x 0.01 = 499.19

49919 x 0.001 = 49.919

49.919 ≈ 49.92, so a) is the correct answer.

34. 4004 x 0.81

    b) 318   b) 2836   c) 3243   d) 3844

Answer: c) 3243

4004 ≈ 4000

0.81 ≈ 80%

80% = 10% x 8

10% of 4000 = 400

400 x 8 = 3200

The closest option to our estimate is c) 3243.

35. 0.512 x 38 : $\frac{1}{5}$

    b) 92   b) 73   c) 142   d) 13

Answer: a) 92

0.512 ≈ 0.5 (a half)

Half of 38 is 19 ≈ 20

Observation: Dividing by a fraction means multiplying by its inverted (upside-down) form.

So 20 : $\frac{1}{5}$ = 20 x 5 = 100

The answer closest to 100 is a) 92.

36. $0.72 \times 19 : \dfrac{1}{9}$

    b) 17   b) 35   c) 86   d) 123

Answer: d) 123

$0.72 \times 19 \approx 0.75 \times 20 = 15$

$15 : \dfrac{1}{9} = 15 \times 9 \approx 15 \times 10 = 150$

The answer closest to 150 is d) 123.

37. $2.16 \times 0.5 : \dfrac{3}{7}$

    b) 2.5   b) 1   c) 0.7   d) 3.6

Answer: a) 2.5

$2.16 \approx 2$

$2 \times 0.5 = 1$

$1 : \dfrac{3}{7} = 1 \times \dfrac{7}{3}$

Knowing that 3 x 2 = 6 and 3 x 3 = 9, we can estimate that in order to obtain 7, we must multiply 3 with a number comprised between 2 and 3. The only answer that matches the required interval is a) 2.5.

38. $28.59 \times 4.5 : \dfrac{4}{5}$

  b) 122   b) 161   c) 32   d) 197

Answer: b) 161

$28.59 \approx 30$

$4.5 \approx 5$

$30 \times 5 = 150$

$150 : \dfrac{4}{5} = 150 \times \dfrac{5}{4} \approx 150 \times 1 = 150$, with the observation that, because $\dfrac{5}{4}$ is bigger than 1, the final result will also be bigger than our estimate 150.

The closest option to 150 is b) 161.

39. $0.783 \times 81 : \dfrac{1}{6}$

  b) 168   b) 296   c) 385   d) 432

Answer: c) 385

$0.783 \approx 0.75$, or 75%

$81 \approx 80$

75% of 80 is 60

$60 : \dfrac{1}{6} = 60 \times 6 = 360$

Option c) 385 comes closest to this value.

40. $0.25 \times 17 : \dfrac{2}{8}$

    b) 15   b) 16   c) 17   d) 18

Answer: c) 17

This operation can be easily solved through the cancelling out method, by noticing that

$0.25 = \dfrac{2}{8}$

Actually, $\dfrac{2}{8} = \dfrac{1}{4} = 0.25$ or 25%.

So $0.25 : \dfrac{2}{8} = 1$

$17 \times 1 = 17$.

41. $0.375 \times 6.9 : \dfrac{3}{8}$

    b) 5.4   b) 6.9   c) 8.2   d) 9.1

Answer: b) 6.9

This operation can be easily solved through the cancelling out method, by noticing that

$0.375 = \dfrac{3}{8}$

So $0.375 : \dfrac{3}{8} = 1$

$6.9 \times 1 = 6.9$.

42. $0.6 \times 60 : \dfrac{6}{10}$

    b) 6   b) 6.6   c) 60   d) 66.66

Answer: c) 60

This operation can be easily solved through the cancelling out method, by noticing that

$0.6 = \dfrac{6}{10}$

So $0.6 : \dfrac{6}{10} = 1$

60 x 1 = 60.

43. $\dfrac{1}{5} \times 16 : 0.2$

    b) 10   b) 14   c) 16   d) 20

Answer: c) 16

This operation can be easily solved through the cancelling out method, by noticing that

$0.2 = \dfrac{1}{5}$

So, $\dfrac{1}{5} : 0.2 = 1$

1 x 16 = 16.

44. $\dfrac{5}{8}$ x 97 x 0.625

    b) 83   b) 97   c) 101   d) 113

Answer: b) 97

This operation can be easily solved through the cancelling out method, by noticing that

$0.625 = \dfrac{5}{8}$

So $\dfrac{5}{8} : 0.625 = 1$

1 x 97 = 97.

45. $\dfrac{6}{16} : 0.375$ x 55

    b) 15   b) 33   c) 49   d) 55

Answer: d) 55

This operation can be easily solved through the cancelling out method, by noticing that

$0.375 = \dfrac{3}{8} = \dfrac{6}{16}$

So $\dfrac{6}{16} : 0.375 = 1$

1 x 55 = 55.

46. $\dfrac{5}{2}$ x 1024 : 2.5

    b) 1024   b) 824   c) 624   d) 124

Answer: a) 1024

This operation can be easily solved through the cancelling out method, by noticing that

$\dfrac{5}{2}$ = 2.5

So $\dfrac{5}{2}$: 2.5 = 1

1 x 1024 = 1024

47. $\dfrac{9}{11}$ x 1074

    b) 616   b) 737   c) 878   d) 989

Answer: c) 878

$1074 \approx 1100$

This estimation helps us divide out the denominator (in our case, 11), which means we will divide 1100 by 11.

1100 : 11 = 100

9 x 100 = 900

The closest option to 900 is c) 878.

48. $\dfrac{5}{12}$ x 14396

   b) 5998   b) 5126   c) 7312   d) 4893

Answer: a) 5998

We can round 14396 up to 14400. This estimation helps us divide out the denominator 12, which means we will divide 14400 by 12.

Since 12 x 12 = 144, then 14400 : 12 = 1200

5 x 12 = 60, so 5 x 1200 = 6000

The closest option to 6000 is a) 5998.

49. $\dfrac{5}{44}$ x 89501

   b) 10170   b) 8526   c) 16324   d) 26312

Answer: a) 10170

We must round the two numbers, 44 and 89501, so that we can divide the denominator 44 out. One option is to consider $89501 \approx 88000$.

88 : 44 = 2, so 88000 : 44 = 2000

5 x 2000 = 10000

Another option would be to round both numbers up:

$44 \approx 45$

$89501 \approx 90000$

90 : 45 = 2, so 90000 : 45 = 2000

5 x 2000 = 10000

Either way, we reach the same estimated result, 10000, which means the correct answer is a) 10170, because it is the closest option.

50. $\dfrac{13}{8}$ x 1511

    b) 1255   b) 2455   c) 25565   d) 3255

Answer: b) 2455

Round the numbers so you can divide out the denominator:

1511 ≈ 1600

1600 : 8 = 200

13 x 200 = 2600

The closest option to 2600 is b) 2455.

51. $\dfrac{2}{5}$ x 10801

    b) 2860   b) 6018   c) 5370   d) 4320

Answer: d) 4320

Round 10801. Because we need a number that could be easily divisible by 5, we will choose fronting as the way to estimate.

10801 ≈ 10000

10000 : 5 = 2000

2 x 2000 = 4000

The closest option to 4000 is d) 4320.

52. $\dfrac{3}{10}$ x 8989

    b) 2099   b) 2696   c) 3099   d) 3696

Answer: b) 2696

We can quickly solve this question thinking in at least two ways, but both require us to round 8989 up to 9000.

We can consider the divide out method.

9000 : 10 = 900

900 x 3 = 2700

Or we can think that $\dfrac{3}{10}$ means 30%, which is 3 x 10%.

10% of 9000 = 900

30% of 9000 = 3 x 900 = 2700

Either way, we do the same calculations and the result is the same. The closest option to 2700 is b) 2696.

53. $\dfrac{5}{6} : \dfrac{25}{6} \times 481$

b) 53   b) 96   c) 127   d) 182

Answer: b) 96

Dividing by a fraction means multiplying by its inverted form. Therefore

$$\dfrac{5}{6} : \dfrac{25}{6} = \dfrac{5}{6} \times \dfrac{6}{25}$$

Using the cross divide method, we see that

6 : 6 = 1

25 : 5 = 5

What remains of our fraction is $\dfrac{1 \times 1}{1 \times 5} = \dfrac{1}{5}$

$481 \approx 500$

$\dfrac{1}{5} \times 500 = 100$

The closest option to our estimated result is b) 96.

54. $\dfrac{9}{4} \times \dfrac{4}{81} \times 236$

b) 26   b) 58   c) 66   d) 82

Answer: a) 26

Use the cross divide method to simplify the fractions:

4 : 4 = 1

81 : 9 = 9

What is left of the fractions is:

$$\frac{1 \times 1}{1 \times 9} = \frac{1}{9}$$

$$\frac{1}{9} \times 236 \approx \frac{1}{10} \times 250 = 25$$

The closest option to our estimate is a) 26.

55. $\frac{3}{7} \times \frac{28}{21} \times 193$

   b) 72   b) 46   c) 225   d) 110

Answer: d) 110

Use the divide out method to simplify the fractions:

21 : 3 = 7

28 : 7 = 4

What is left of the fractions is:

$$\frac{1 \times 4}{1 \times 7} = \frac{4}{7}$$

$$\frac{4}{7} \times 193 \approx \frac{4}{8} \times 200$$

$$\frac{4}{8} = \frac{1}{2} = 0.5 \text{ (half)}$$

Half of 200 is 100. The closest option to this number is d) 110.

56. $\dfrac{8}{33}$ x $\dfrac{3}{64}$ x 818

    b) 9   b) 81   c) 65   d) 147

Answer: a) 9

Use the cross divide method to simplify the fractions:

64 : 8 = 8

33 : 3 = 11

Now the fractions look like this:

$$\dfrac{1 \text{ x } 1}{11 \text{ x } 8} = \dfrac{1}{88}$$

$$\dfrac{1}{88} \text{ x } 818 \approx \dfrac{1}{80} \text{ x } 800 = 10$$

The closest number to our estimated result is a) 9.