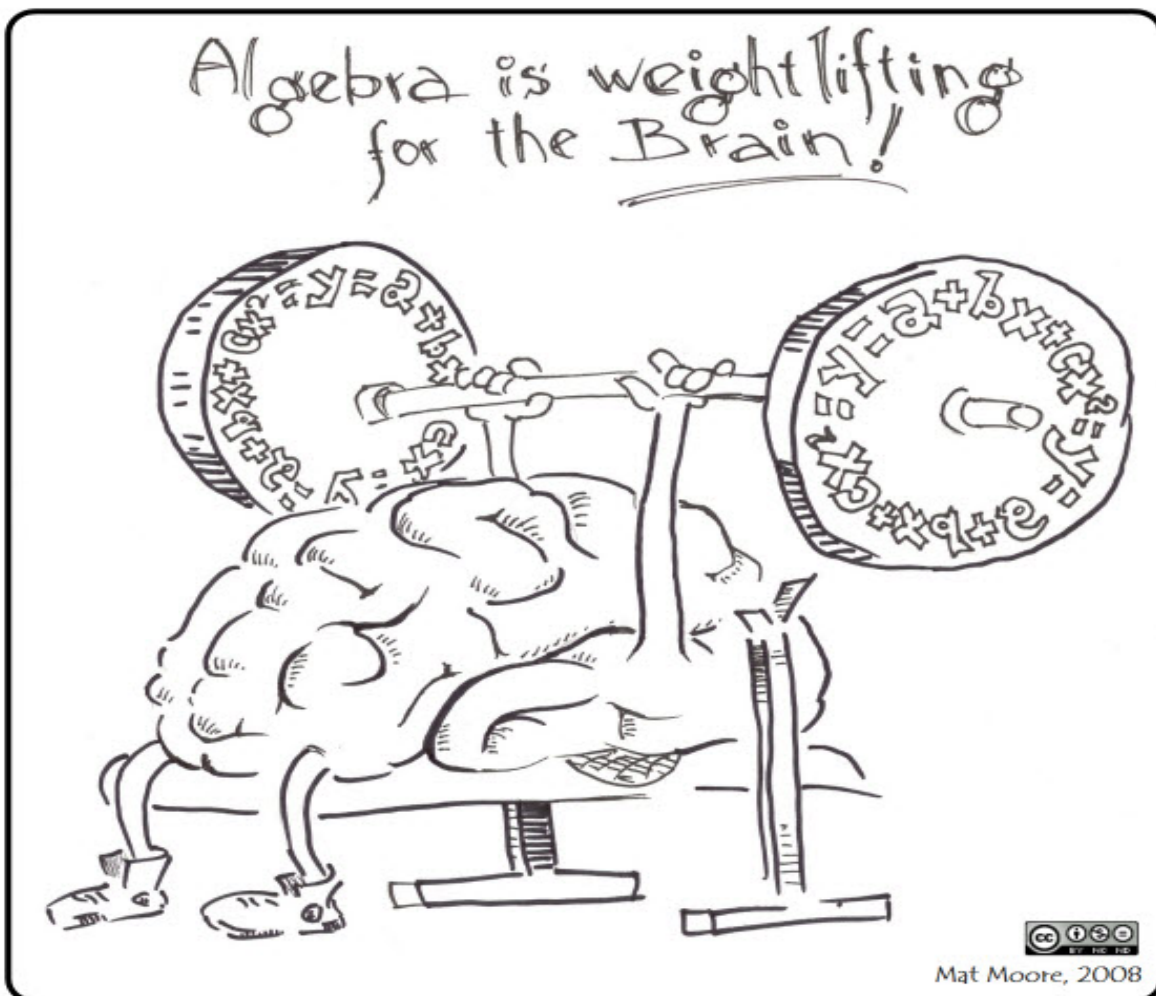


SUMMER MATH PACKET

Pre-Algebra COURSE 200



MATH SUMMER PACKET

INSTRUCTIONS

Attached you will find a packet of math problems for your enjoyment over the summer. The purpose of the summer packet is to review the topics you have already mastered in math and to make sure that you are prepared for the class you are about to enter.

The packet contains a brief summary and explanation of the topics so you don't need to worry if you don't have your math book. You will find many sample problems, which would be great practice for you before you try your own problems. The explanations are divided into sections to match the sample problems so you should be able to reference the examples easily.

This packet is optional but heavily recommended. Some of the answers are provided in the back of the packet. This will allow you to check your work for correctness. You will have an opportunity to show off your skills during the first week when your class reviews the problems in the packet.

If you need additional help on one or two topics, you may want to try math websites such as: www.mathforum.org or Khan Academy. Math teachers will be available for assistance at the high school the week before school. Check the school website for specific dates and times.

Enjoy your summer and don't forget about the packet. August will be here before you know it! If you lose your packet, you will be able to access the packets on-line at the school website; www.oprfhs.org starting May 30th.

See you in August!

The OPRFHS Math Department

Welcome to Pre- Algebra 1-2!

Welcome to Pre-Algebra!

Are you wondering what your class will be like? Here are some ideas and helpful hints to be of assistance to you throughout your transition into high school math.

Required materials:

- ✓ Textbook - Algebra Readiness by Prentice Hall Mathematics
- ✓ Pencil and eraser

Participation

- Math is not a spectator sport. You must participate to be successful.
- Bring your pencil, calculator, and homework to class every day.
- Students will be expected to ask questions and participate in group discussions on a daily basis.
- Math is best learned in a team, be prepared to be a good team member.
- Participate, participate, participate, and have fun. The more you participate, the more you will learn!

All students are expected to follow the Golden Rule:

Respect Others
Respect Property
Respect Self
Have Fun and Learn Math

This packet contains problems covering the topics listed below which have been covered in previous math courses.

This packet is a REVIEW!

Welcome to Pre- Algebra 1-2!

Multiplication Table	Converting a Decimal to a Fraction
Long Division	Converting a Fraction to a Percent
Rounding	Converting a Percent to a Fraction
Reducing Fractions	Converting a Decimal to a Percent
Adding/Subtracting/Multiplying/ Dividing Fractions	Converting a Percent to a Decimal
Adding/Subtracting/Multiplying/ Dividing Decimals	Squaring and Cubing numbers
Converting an Improper Fraction to a Mixed Number	Finding Factors of Numbers
Converting a Mixed Number to an Improper Fraction	Comparing numbers (greater than, less than, equal to)
Converting a Fraction to a Decimal	Finding points on a number line



Welcome to Pre- Algebra 1-2!

Examples

Write each decimal as a percent.

$$\Rightarrow 0.39 \rightarrow \frac{39}{100} = 39\%$$

$$\Rightarrow 0.612 \rightarrow \frac{61.2}{100} = 61.2\%$$

\Rightarrow Write $\frac{3}{8}$ as a percent.

$\frac{3}{8}$ is the same as $3 \div 8$

$$\begin{array}{r} 0.375 \\ 8 \overline{)3.000} \\ \underline{24} \\ 60 \\ \underline{56} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

$$\frac{3}{8} = 0.375 \rightarrow 37.5\%$$

\Rightarrow Write $\frac{5}{3}$ as a percent.

$\frac{5}{3}$ is the same as $5 \div 3$

$$\begin{array}{r} 1.6\bar{6} \text{ or } 1\frac{2}{3} \\ 3 \overline{)5.00} \\ \underline{3} \\ 20 \\ \underline{18} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

$$\frac{5}{3} = 1.\bar{6} \text{ or } 1\frac{2}{3} \rightarrow 166\frac{2}{3}\%$$

Examples

Write each percent as a fraction in simplest form.

$$\Rightarrow 24\% \rightarrow \frac{24}{100} = \frac{6}{25}$$

$$\begin{aligned} \Rightarrow 83\frac{1}{3}\% &\rightarrow \frac{83\frac{1}{3}}{100} = 83\frac{1}{3} \div 100 \\ &= \frac{250}{3} \cdot \frac{1}{100} \\ &= \frac{250}{300} \\ &= \frac{5}{6} \end{aligned}$$

Welcome to Pre- Algebra 1-2!

Examples

Write each percent as a decimal.

$$\Rightarrow 36\% \Rightarrow \frac{36}{100} = 0.36$$

$$\begin{aligned} \Rightarrow 82.5\% &\Rightarrow \frac{82.5}{100} = \frac{825}{1000} \\ &= 0.825 \end{aligned}$$

Welcome to Pre- Algebra 1-2!

Write each decimal as a percent.

1. 0.33

2. 0.04

3. 0.2

4. 0.015

Write each percent as a decimal.

5. 98%

6. 2%

7. 90%

8. 13.5%

Write each fraction as a percent.

9. $\frac{17}{100}$

10. $\frac{6}{10}$

11. $\frac{44}{100}$

12. $\frac{1}{10}$

Write each percent as a fraction in lowest terms.

13. 23%

14. 20%

15. 2%

16. 75%

Welcome to Pre- Algebra 1-2!

Examples

Solve each equation.

➔ $d = 12.5 + 13.7$

$$\begin{array}{r} d = 26.2 \\ 12.5 \\ + 13.7 \\ \hline 26.2 \end{array}$$

*Align decimal points and place-value positions.
Add as with whole numbers.*

➔ $f = 119 - 105.7$

$$\begin{array}{r} f = 13.3 \\ 119.0 \\ - 105.7 \\ \hline 13.3 \end{array}$$

*Place the decimal point and annex a zero.
Then, align the decimal points and subtract.*

Examples

Solve each equation.

➔ $y = (2.3)(3.5)$

$$\begin{array}{r} 2.3 \\ \times 3.5 \\ \hline 115 \\ 69 \\ \hline 8.05 \end{array}$$

*There is 1 place after the decimal point.
There is 1 place after the decimal point.*

$y = 8.05$
Estimate: $2 \cdot 4 = 8$

$1 + 1 = 2$ *There are two places after the decimal point.*

➔ $(0.105)(0.03) = k$

$$\begin{array}{r} 0.105 \\ \times 0.03 \\ \hline 0.00315 \end{array}$$

There are 3 places after the decimal point.

There are 2 places after the decimal point.

$0.00315 = k$
Estimate: $0.1 \cdot 0.03 = 0.003$.

There are 5 places needed. Annex 2 zeros.

Welcome to Pre- Algebra 1-2!

Divide.

➡ $50 \div 2.5$

$$2.5 \overline{)50}$$

$$2.5 \cdot 10 \overline{)50 \cdot 10}$$

Multiply both 2.5 and 50 by 10 to get a whole number divisor.

$$2.5 \overline{)50.0}$$

Another way to multiply by 10 is to move the decimal point 1 place to the right.

$$\begin{array}{r} 20 \\ 25 \overline{)500} \end{array}$$

The quotient is 20.

➡ $0.0078 \div 0.003$

$$0.003 \overline{)0.0078}$$

$$0.003 \overline{)0.0078}$$

Multiply 0.003 and 0.0078 by 1000 to get a whole number divisor.

$$\begin{array}{r} 2.6 \\ 3 \overline{)7.8} \end{array}$$

The quotient is 2.6.

Simplify

17. $8.3 + 4.5$

18. $3.4625 + 70.39$

19. $8.35 - 4.08$

20. $0.68 - 0.455$

21. $47 - 6.38$

22. 0.6×0.6

23. 0.5×0.08

24. 11×6.66

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25. $3\overline{)528}$

26. $47\overline{)1316}$

27. $0.4\overline{)1.52}$

28. $0.008\overline{)0.62}$

Welcome to Pre- Algebra 1-2!

Examples

Solve $x = \frac{5}{9} \cdot \frac{8}{15}$.

Method 1

$$x = \frac{5}{9} \cdot \frac{8}{15}$$

$$x = \frac{5 \cdot 8}{9 \cdot 15} \quad \begin{array}{l} \text{Multiply the numerators.} \\ \text{Multiply the denominators.} \end{array}$$

$$x = \frac{40}{135} \text{ or } \frac{8}{27} \quad \text{Simplify.}$$

Method 2

$$x = \frac{5}{9} \cdot \frac{8}{15}$$

$$x = \frac{\overset{1}{\cancel{5}}}{9} \cdot \frac{8}{\underset{3}{\cancel{15}}} \quad \begin{array}{l} \text{The GCF of 5 and 15 is 5.} \\ \text{Divide 5 and 15 by 5.} \end{array}$$

$$x = \frac{1 \cdot 8}{9 \cdot 3} \text{ or } \frac{8}{27} \quad \begin{array}{l} \text{Multiply the numerators.} \\ \text{Multiply the denominators.} \end{array}$$

Examples

Solve $a = 2\frac{1}{3} \cdot 3\frac{3}{4}$.

$$a = 2\frac{1}{3} \cdot 3\frac{3}{4} \quad \text{Rename } 2\frac{1}{3} \text{ as } \frac{7}{3}. \text{ Rename } 3\frac{3}{4} \text{ as } \frac{15}{4}.$$

$$a = \frac{7}{3} \cdot \frac{15}{4}$$

$$a = \frac{7}{\underset{1}{\cancel{3}}} \cdot \frac{\overset{5}{\cancel{15}}}{4} \quad \text{Divide 15 and 3 by 3. Why? } \mathbf{3 \text{ is the GCF of 15 and 3}}$$

$$a = \frac{7 \cdot 5}{1 \cdot 4}$$

$$a = \frac{35}{4} \text{ or } 8\frac{3}{4}$$

Multiply

29. $5 \times \frac{3}{20}$

30. $10 \times 2\frac{1}{5}$

31. $\frac{11}{2} \times \frac{4}{33}$

32. $3\frac{1}{4} \times 2\frac{2}{5}$

Welcome to Pre- Algebra 1-2!

Examples

Solve $y = \frac{4}{5} \div \frac{2}{3}$.

$$y = \frac{4}{5} \div \frac{2}{3}$$

$$y = \frac{4}{5} \cdot \frac{3}{2} \quad \text{Dividing by } \frac{2}{3} \text{ is the same as multiplying by } \frac{3}{2}$$

$$y = \frac{\overset{2}{\cancel{4}}}{5} \cdot \frac{3}{\underset{1}{\cancel{2}}} \quad \text{Divide 4 and 2 by 2. Why? } \mathbf{2} \text{ is the GCF of 4 and 2.}$$

$$y = \frac{6}{5} \text{ or } 1\frac{1}{5} \quad \text{Rename as a mixed numeral in simplest form.}$$

Divide

33. $4 \div \frac{1}{2}$

34. $5\frac{2}{3} \div 1\frac{2}{15}$

35. $\frac{7}{10} \div 7$

36. $\frac{1}{4} \div \frac{1}{4}$

Welcome to Pre- Algebra 1-2!

Examples

Solve each equation. Write each solution in simplest form.

$$a = \frac{7}{12} + \frac{8}{15} \quad \begin{array}{l} 12 = 2^2 \cdot 3 \text{ and } 15 = 3 \cdot 5 \\ \text{The LCM of 12 and 15 is } 2^2 \cdot 3 \cdot 5 \text{ or } 60. \end{array}$$

$$a = \frac{35}{60} + \frac{32}{60} \quad \frac{7 \cdot 5}{12 \cdot 5} = \frac{35}{60} \text{ and } \frac{8 \cdot 4}{15 \cdot 4} = \frac{32}{60}$$

$$a = \frac{67}{60} \text{ or } 1\frac{7}{60} \quad \text{Rename } \frac{67}{60} \text{ as } 1\frac{7}{60}.$$

Examples

Solve $b = \frac{25}{12} - \frac{7}{12}$.

$$b = \frac{25}{12} - \frac{7}{12}$$

$$b = \frac{18}{12} \quad \text{Since the fractions have like denominators, subtract the numerators.}$$

$$b = 1\frac{6}{12} \text{ or } 1\frac{1}{2} \quad \text{Rename as a mixed numeral and simplify.}$$

Welcome to Pre- Algebra 1-2!

Simplify and reduce to lowest terms.

37. $\frac{7}{8} - \frac{1}{8}$

38. $5 + \frac{1}{4}$

39. $\frac{11}{15} + \frac{2}{5}$

40. $5\frac{5}{8} - 2\frac{3}{8}$

Examples

Write each power as a product of the same factor.

➡ 2^4

The base is 2. The exponent 4 means 2 is a factor 4 times.

$$2^4 = 2 \cdot 2 \cdot 2 \cdot 2$$

➡ b^3

The base is b . The exponent 3 means b is a factor 3 times.

$$b^3 = b \cdot b \cdot b$$

Write each product using exponents.

➡ $6 \cdot 6$

The base is 6. Because 6 is a factor 2 times, the exponent is 2.

$$6 \cdot 6 = 6^2$$

➡ $x \cdot x \cdot x$

The base is x . Because x is a factor 3 times, the exponent is 3.

$$x \cdot x \cdot x = x^3$$

Simplify

41. 2^3

42. 3^2

Welcome to Pre- Algebra 1-2!

Examples

Rounding Numbers

1. Find the place-value position being rounded to.
2. Then, look at the digit to the right.
3. *Round up* if the digit to the right is 5 or greater
4. *Round down* if the digit to the right is less than 5.

➡ **Round 2.6 to the nearest whole number.**

The ones digit is 2. The digit to its right is 6.
Since 6 is greater than 5, round up.
To the nearest whole number, 2.6 is 3.

➡ **Round 9.528 to the nearest tenth.**

The digit 5 is in the tenths place. The digit to its right is 2.
Since 2 is less than 5, round down.
To the nearest tenth, 9.528 is 9.5.

➡ **Round 56.925 to the nearest hundredth.**

The digit 2 is in the hundredths place. The digit to its right is 5, so round up.
To the nearest hundredth, 56.925 is 56.93.

43. Round 125.236 to the nearest hundredth.

44. Round 12.22 to the one's place.

45. Round 2.6999 to the nearest thousandths.

46. Round 0.49 to the one's place.

Welcome to Pre- Algebra 1-2!

Examples

➡ Find all the whole number factors of 9.

$$9 \div 1 = 9 \text{ R}0$$

$$9 \div 2 = 4 \text{ R}1$$

$$9 \div 3 = 3 \text{ R}0$$

Stop dividing. *Why?*

The factors of 9 are 1, 3, and 9.

➡ Find all the whole number factors of 30.

$$30 \div 1 = 30 \text{ R}0$$

$$30 \div 2 = 15 \text{ R}0$$

$$30 \div 3 = 10 \text{ R}0$$

$$30 \div 4 = 7 \text{ R}2$$

$$30 \div 5 = 6 \text{ R}0$$

Stop dividing.

The factors of 30 are 1, 2, 3, 5, 6, 10, 15, and 30.

List all of the factors of the following.

47. 32

48. 36

49. 51

50. 72

Fill in the blanks with $<$, $>$, or $=$.

51. 12 _____ 11.78

52. .0123 _____ .012

53. $\frac{1}{2}$ _____ $\frac{3}{4}$

Welcome to Pre- Algebra 1-2!

Answers

1. 33%

2. 4%

3. 20%

4. 1.5%

5. 0.98

6. 0.02

7. 0.9

8. 0.135

9. 17%

10. 60%

11. 44%

12. 10%

13. $\frac{23}{100}$

14. $\frac{1}{5}$

15. $\frac{1}{50}$

16. $\frac{3}{4}$

17. 12.8

18. 73.8525

19. 4.27

20. 0.225

21. 40.62

22. 0.36

23. 0.04

24. 73.26

25. 176

26. 28

27. 3.8

28. 77.5

29. $\frac{3}{4}$

30. 22

31. $\frac{2}{3}$

32. $7\frac{4}{5}$ or $\frac{39}{5}$

Welcome to Pre- Algebra 1-2!

33. 8 34. 5 35. $\frac{1}{10}$

36. 1

37. $\frac{3}{4}$ 38. $5\frac{1}{4}$ or $\frac{21}{4}$ 39. $1\frac{2}{15}$ or $\frac{17}{15}$

40. $3\frac{1}{4}$ or $\frac{13}{4}$

41. 8 42. 9

43. 125.24

44. 12

45. 2.700

46. 0

47. 1, 2, 4, 8, 16, 32 48. 1, 2, 3, 4, 6, 9, 12, 18, 36

49. 1, 3, 17, 51

50. 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

51. > 52. > 53. <