# Discrete Math

# 2021

## Summer Enrichment Packet

You are taking **Discrete Math** in the fall. A mastery of and proficiency performing the following math skills will be necessary for success in this **Discrete Math** course. Work on each problem in order. Copy the problem onto loose---leaf paper; show all work in a neat and organized manner. Box in your final answer. Complete this entire assignment and bring to class on the first day.

**Name: _____**

**Date: _____**

**Math Class you took last year:_____**

Each section will have one of the following directions:

ODDS (do #1,3,5,...)

EVENS (do #2, 4, 6,...)

X3 (do#3, 6, 9,...)

ALL (do I really need to explain this?)

Only do the questions stated.

A. Give the greatest common factor(GCF) and least common multiple(LCM) of the pair of numbers.

ODDS 1. 15, 25 2. 4, 7 3. 20, 6 4. 12, 9 5. 18, 24 6. 45, 25

B. Find the reciprocal of each number.

EVENS 1. $\frac{2}{5}$ 2. $-\frac{1}{14}$ 3. 7 4. $6\frac{2}{5}$ 5. $10\frac{1}{3}$ 6. $-3\frac{5}{7}$

C. Multiply or divide. Write the answer as a simple fraction or a mixed number in lowest terms.

ODDS 1. $\frac{2}{3}\times\frac{4}{5}$ 2. $\frac{5}{8}\times\frac{4}{15}$ 3. $\frac{3}{5}\times 1\frac{2}{3}$ 4. $5\frac{1}{4}\times 1\frac{1}{7}$

5. $\frac{7}{8}\div\frac{3}{4}$ 6. $\frac{4}{5}\div\frac{2}{3}$ 7. $2\frac{1}{4}\div 1\frac{1}{3}$ 8. $3\frac{2}{5}\div 4$

D. Perform the indicated operation(s). You must find the LCD. Simplify the result.

X3 1. $\frac{3}{8}+\frac{5}{13}$ 2. $\frac{7}{4}-\frac{1}{12}$ 3. $\frac{2}{5}-\frac{1}{3}-\frac{1}{6}$ 4. $\frac{8}{9}+\frac{2}{3}+\frac{1}{2}$

5. $\frac{1}{2}+\frac{1}{3}+\frac{1}{4}$ 6. $\frac{9}{11}-\frac{5}{3}-\frac{5}{6}$ 7. $-\frac{3}{12}+\frac{4}{10}-\frac{1}{5}$

8. $\frac{2}{8}-\frac{3}{4}+\frac{1}{2}$ 9. $\frac{7}{15}-\frac{4}{5}+\frac{2}{3}$ 10. $\frac{1}{2}-\frac{8}{10}+\frac{5}{4}$

11. $5\frac{1}{8}-2\frac{3}{4}$ 12. $4\frac{3}{8}-2\frac{5}{6}$ 13. $9\frac{2}{5}+3\frac{1}{3}$ 14. $2\frac{1}{20}+3\frac{3}{8}$

E. Solve the proportion. Hint: Cross products are equal in a proportion.

ODDS 1. $\frac{5}{7}=\frac{a}{28}$ 2. $\frac{5}{4}=\frac{x}{10}$ 3. $\frac{3}{7}=\frac{9}{-b}$ 4. $\frac{60}{40}=\frac{12}{m}$ 5. $\frac{-3}{x}=\frac{40}{6}$

F. Write as a decimal.

ODDS 1. 63% 2. 7% 3. 125% 4. 0.8% 5. 5.2%

6. $\frac{1}{4}$ 7. $\frac{9}{10}$ 8. $\frac{30}{25}$ 9. $\frac{2}{5}$ 10. $\frac{3}{8}$

G. Write as a percent.

EVENS

1. 0.7
2. 0.24
3. 1.3
4. 0.04
5. 1.67
6. $\frac{1}{10}$
7. $\frac{4}{5}$
8. $\frac{17}{20}$
9. $\frac{5}{2}$
10. $\frac{3}{16}$

H. Find the answer.

EVENS

1. What percent of 90 is 15?
2. 12 is what percent of 60?
3. 15 is what percent of 90?
4. What percent of 18 is 4.5

I. Evaluate the expression. Use the proper order of operations.

EVENS

1. $3^3 - 12 \div 4$
2. $10^2 \div 4 + 6$
3. $10^2 \div (4+6)$
4. $\frac{9 \cdot 7^2}{5 + 8^2 - 6}$
5. $3 + 7(3.5 \div 5)$
6. $2 + 21 \div 3 - 6$
7. $50 \div (6^2 - 11) - 2$
8. $3(2.7 \div 0.9) - 5$
9. $\left[(5 \cdot 2^3) + 8\right] \div 16$
10. $2.5 \cdot 0.5^2 \div 5$

J. Evaluate the expression or power.

X3

1. $10^2$
2. $1^5$
3. $3^4$
4. $\left(\frac{3}{5}\right)^3$
5. $-5^4$
6. $(-2)^5$
7. $-4^3$
8. $(-5)^2$
9. $\left(-\frac{2}{3}\right)^4$
10. $-\frac{4^2}{7}$
11. $b^4$ when $b = 9$
12. $4^n$ when $n = 5$
13. $16 - x^3$ when $x = 2$
14. $(d-3)^2$ when $d = -4$
15. $-x^2 + 2x - 5$ when $x = 3$

K. Simplify the expression.

X3

1. $-3 + 8$
2. $5 + (-7)$
3. $-4 + (-11)$
4. $-8 - 5$
5. $-4 + 13 + (-6)$
6. $15 + (-12) + (-4)$
7. $-2 + (-9) + 8$
8. $17 + (-5) + 15$
9. $4.1 - 6.3$
10. $-3 - (-7)$
11. $-6 + (-3) - 4$
12. $-15 + 4 - 12$

13. $-11-(-6)-7$ 14. $3.6-2.4-(-6.1)$ 15. $\frac{9}{10}-\frac{1}{2}+\left(-\frac{1}{5}\right)$

16. $(-6)(-7)$ 17. $3(-8)(-2)$ 18. $(-8)(-4x)$

19. $-3(-y)(-y)$ 20. $(-c)^3(c)$ 21. $(-7)^2(b)(-b)$

22. $-4\left(-a^4\right)$ 23. $6(y+5)$ 24. $4(a-6)$

25. $(x+3)(-5)$ 26. $-r(r-5)$ 27. $-k(7+k)$

28. $s\left(s-s^2\right)$ 29. $(0.5z-1.4)6$ 30. $3x+7x$

31. $5.4m-2.3m$ 32. $82p-(-29p)$ 33. $6-4t-4$

34. $5+4(x-2)$ 35. $8x^2+5-2x^2$ 36. $2x(7-x)+3x^2$

37. $\frac{2}{3}x+\left(-\frac{1}{6}\right)x$ 38. $18\div(2)$ 39. $-48\div12$

40. $16\div\left(-\frac{4}{5}\right)$ 41. $\frac{3x}{8}\div\frac{1}{2}$ 42. $21x\div7$

43. $8x\div\left(-\frac{1}{4}\right)$ 44. $-24x\div\left(-\frac{2}{3}\right)$ 45. $\frac{-22}{-\frac{1}{3}}$ 46. $\frac{\frac{1}{2}}{\frac{3}{4}}$

47. $\frac{\frac{2}{3}}{5}$ 48. $\frac{1}{\frac{0.5}{4}}$ 49. $-39\div\left(-4\frac{1}{3}\right)$ 50. $68x\div\left(-\frac{17}{9}\right)$

51. $-54x^2\div\frac{-9}{5}$ 52. $-7\cdot\left(-\frac{2w}{7}\right)$ 53. $\frac{42t}{-14z}\div\frac{-6}{7t}$

54. $49x\div3\frac{1}{2}$ 55. $\frac{3y}{4}\div\frac{1}{2}$ 56. $-\frac{2b}{7}\div\frac{7}{9}$

57. $\frac{18x-9}{3}$ 58. $\frac{22x+10}{2}$ 59. $\frac{-56+x}{-8}$ 60. $\frac{45-5x}{5}$

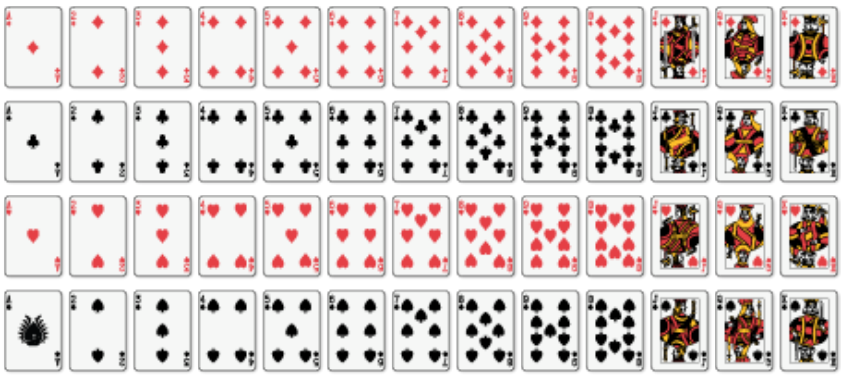
61. $\frac{22-4x}{4}$ 62. $\frac{15x-7}{5}$ 63. $\frac{20x+3}{5}$ 64. $\frac{4y-12}{5}$

L. Solve each equation.

ODDS

1. $2x=-10$
2. $x-4x=12$
3. $\frac{x}{3}=2$
4. $x-\frac{x}{2}=5$
5. $\frac{x}{3}-\frac{x}{5}=3$
6. $-\frac{3}{8}y=-6$
7. $-\frac{1}{2}b=-\left|-8\right|$
8. $\frac{9}{2}(x+3)=27$
9. $x-3=x+1$
10. $-\frac{4}{9}(2x-4)=48$
11. $9x-5(3x-12)=30$
12. $5m-(4m-1)=-12$
13. $3(4+4x)=12x+12$
14. $-(8n-2)=3+10(1-3n)$
15. $-2(6-10n)=10(2n-6)$
16. $\frac{1}{3}n+\frac{3}{4}=\frac{5}{6}n-1$
17. $\frac{z-3}{10}+\frac{z-5}{5}=\frac{1}{2}$
18. $6-2(3-x)=-12x-3x$
19. $\frac{1}{2}(12-2x)-4=5x+2(x-7)$
20. $-4(3x+5)=-2(5-x)$

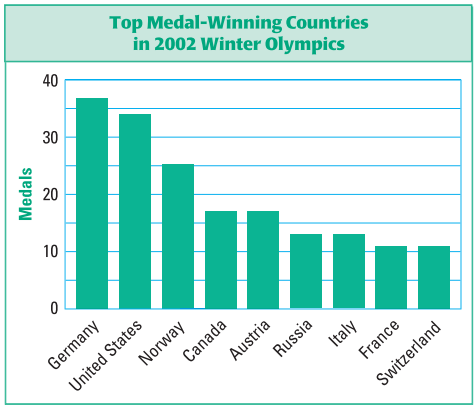
M. The following is a picture of a standard deck of 52 cards. You will <u>need</u> to know how many of each type of card is in a standard deck of 52 cards for this class. Use this picture to answer questions 1 – 5.



ALL

1. How many red cards are in a standard deck of 52 cards?
2. How many kings and queens are in a standard deck of 52 cards?
3. How many black aces are there in a standard deck of 52 cards?
4. How many spades are in a standard deck of 52 cards?
5. How many face cards are in a standard deck of 52 cards?

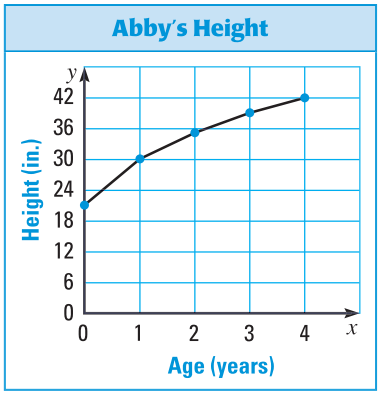
N. In Exercises 1 – 8, use the bar graph below, which shows that top medal-winning countries in the 2002 Winter Olympics.




ALL

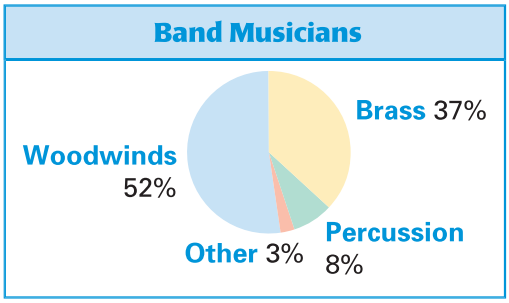
1. Which country won the most medals? How many medals did it win?
2. How many medals did Norway win?
3. Which two countries won 17 medals each?
4. Which country won the same number of medals as France?
5. How many countries won more than 15 medals?
6. Which country won twice as many medals as Austria?
7. How many medals did Russia and Italy win altogether?
8. How many medals did the top 3 medal-winning countries win?

O. In Exercises 1 – 9, Use the line graph, which shows Abby's height from birth to 4 years old.




1. How tall was Abby when she was born?
2. How old was Abby when she was 35 inches tall?
3. In which year did Abby grow the most?
4. In which year did Abby grow the least?
5. How many inches did Abby grow from age 3 to age 4?
6. In which year did Abby grow 5 inches?
7. How many inches did Abby grow in 4 years?
8. At what age was Abby's height double her height at birth?
9. If Abby maintains the same growth rate from age 4 to age 5 that she had from age 3 to age 4, how tall will she be when she is 5?

P. In Exercises 1 – 6, use the circle graph, which shows the types of instruments played by musicians in a college band.




1. What percent of the musicians in the band play a brass instrument?
2. Which type of instrument do 8% of the musicians in the band play?
3. Which type of instrument do more than half of the musicians in the band play?
4. The instruments in the "Other" category are harp, string bass, and keyboard. What percent of the band musicians play one of these instruments?
5. In this band, which type of instrument is played by about 5 times as many musicians as play percussion instruments?
6. There are 91 musicians in the band. How many more musicians play a woodwind than play a percussion instrument?

Q. Find the answer.

ALL

1. Tasha bought salads at $2.75 each and cartons of milk at $0.80 each. The total cost was $16.15. How much of each did Tasha buy?

2. A rectangular garden is 45 feet long and has perimeter 150 feet. Rows of plants are planted 3 feet apart. Find the area of the garden?

3. If five turkey club sandwiched cost $18.75, how much would seven sandwiches cost?

4. Mary wants to arrive at school no later than 7:25 A.M. for her first class. It takes her 25 minutes to shower and dress, 15 minutes to eat breakfast, and at least 20 minutes to get to school. What time should she plan to get out of bed?

5. There are 32 players in a single-elimination chess tournament. That is, a player who loses once is eliminated. Assuming that no ties are allowed, how many games must be played to determine a champion?

6. Carl has $135 in the bank and plans to save $5 per week. Jean has $90 in the bank and plans to save $10 per week. How many will it be before Jean has at least as much in the bank as Carl?

7. The Lees are planning to use square tiles to tile a kitchen floor that is 18 feet long and 15 feet wide. Each tile covers one square foot. A carton of tiles cost $18. How much will it cost to cover the entire kitchen floor?

8. A car travels 60 miles per hour for a distance 300 miles. How long did the trip take? Hint: d=rt

9. You pay $105 for 8 tickets to attend a folk festival. Tickets for students cost $10 each and tickets for adults cost $15 each. How many of each type of ticket did you buy.

10. You spend $13 to rent five movies for the weekend. Since new releases rent for $3 and regular movies rent $2, how many regular movies did you rent? How many new releases did you rent?