



Think Academy

MATH-PEDIA

TO MIDDLE SCHOOL



6 Key Modules

40+ Attention Points

50+ Knowledge summaries

500+ Practices

- ✓ Contains everything you need to prepare middle school math.
- ✓ Complete review of elementary school math.

学而思美国ONLINE

中学数学课程体系

Think Academy 中学长期班体系专为美国G6-G9的初中生打造，提供专业、系统且全面的全年数学课程。课程依据北美学生的学习特点与需求，分为Core+体系（校内同步），Honors体系（超前升学），Challenge体系和Competition体系。

Core+体系（校内同步体系）：通过预习并巩固重点知识，精准练习，实现校内同年进度数学轻松拿A的目标。

Honors体系（超前升学体系）：超前中学正常进度1年，匹配公校最快班进度，并加深学习难度，实现进入公校最快班，高中毕业前修完5门理科AP，SAT/ACT数学满分的目标

Challenge体系：超前中学正常进度2年，在Honors班的基础上继续加快进度，实现两年学完Algebra 1, Geometry和Algebra 2的目标，进度和深度匹配顶尖私校，高中毕业前修完8门理科AP，达到SAT/ACT数学满分的目标。

Competition体系：中学AMC竞赛体系，专门针对AMC考纲设计，通过超纲匹配竞赛考点的体系，培养过上百名获奖选手的专业教练团队授课，帮助中学孩子在G8/9前晋级AIME。

	Year 1			Year 2			Year 3			Year 4			Year 5		
	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring
Core+	Math 6/7a			Math 7b/8			Algebra 1			Geometry			Algebra 2		
Honors	Pre-Algebra			Algebra 1			Geometry			Algebra 2/ Trigonometry			Pre-Calculus		
Challenge	Pre-Algebra+			Algebra 1	Intro to Geo		Geometry	Algebra 2	Trig	Pre-Calculus			AP Calculus		
Competition				AMC 8 HR		AMC 10 Introduction		AMC 10 AIME qualify			AMC 12+ AIME				

学而思美国ONLINE

中学竞赛体系学员成绩

2022-2024 AMC8累计获奖学员人数:



Achievement Roll
(低年级成就奖)



Honor Roll
(全国Top 5%)



DHR
(全国Top 1%)

2022-2024 AMC10累计获奖学员人数:



AIME晋级
(全国Top 7%)



Honor Roll
(全国Top 5%)



DHR
(全国Top 1%)

2024 Think全球IMO获奖人数

7金 1银

金牌总数居全球第一



International Mathematical Olympiad
Foundation Bronze Sponsor

Think Academy是国际数学奥林匹克
竞赛官方合作伙伴

Think竞赛课程为什么能培养上千位获奖学员?

1 专业竞赛体系，一站式解决竞赛学习

Think Competition根据美国数学竞赛AMC的考纲设计，贴合学生的考试节奏，在**5-6年级学习AMC8**，**7-8年级学习AMC10**，知识点涵盖竞赛的四大模块：代数，数论，数论，和计数概率，从而每年实现一个竞赛目标，最终帮助中学生在**进入高中前完成AMC10的学习，顺利晋级AIME。**

优秀竞赛师资，为好成绩保驾护航

Think Competition课程均由**多年竞赛授课经验**的老师授课，让孩子可以更高效且轻松的掌握复杂竞赛知识点。



James老师

宾大-5年竞赛教龄



Dennis老师

杜克大学-4年竞赛教龄



Yichen老师

哥大-4年竞赛教龄

3 和优秀的同龄人一起学习，共同进步

竞赛体系每年的课程均设置入学考试，确保每位学生可以和水平相近的同龄人一起学习，让竞赛备考不再孤单，孩子们可以互相激励，共同进步。

课程亮点

家长省心，规划清晰

授课老师为孩子定制学习规划， 全程跟踪学习进度

- 报名课程：学习规划老师针对孩子的学习能力与目标，**制定个性化学习方案**。
- 上课期间：每月和家长**反馈孩子的学习情况**，提供有针对性的学习建议，并**监督落实孩子的提升方案**。
- 期中/期末：每学期组织**家长会**，梳理孩子的学习优势和薄弱环节，并制定新学期的学习规划。



每周学习闭环，保障学习效果

- 课前预习：15分钟**课前预习题**，温故而知新
- 课后作业：每节课**配套作业**题目，老师主动和家长反馈学生的作业完成情况。
- Office Hour：**免费作业讲解直播课**，解答孩子课后不明白的题目与知识点。
- 作业解析：每道作业配套**讲解视频**，随时复习错题



全年学习服务支持

- 专业客服，**全年 364 天 Parent APP 在线支持**，快速响应任何问题
- Parents App**直接和授课老师联系**，沟通更高效，随时掌握孩子的学情表现。
- 在线作业答疑，给孩子**最及时的学习帮助**

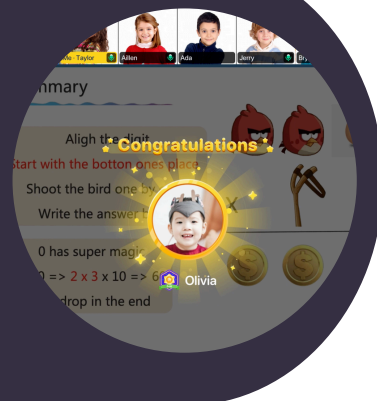


课程亮点

孩子开心，学习更高效

精心打磨课堂设计，让孩子爱上数学

- **互动游戏+情景化教学**，让数学课堂不再枯燥
- **金币激励**，孩子可以用金币兑换实体或虚拟奖品，给孩子更及时的正反馈，让孩子更主动地完成学习任务和目标。



自研上课App，强化线上课程体验

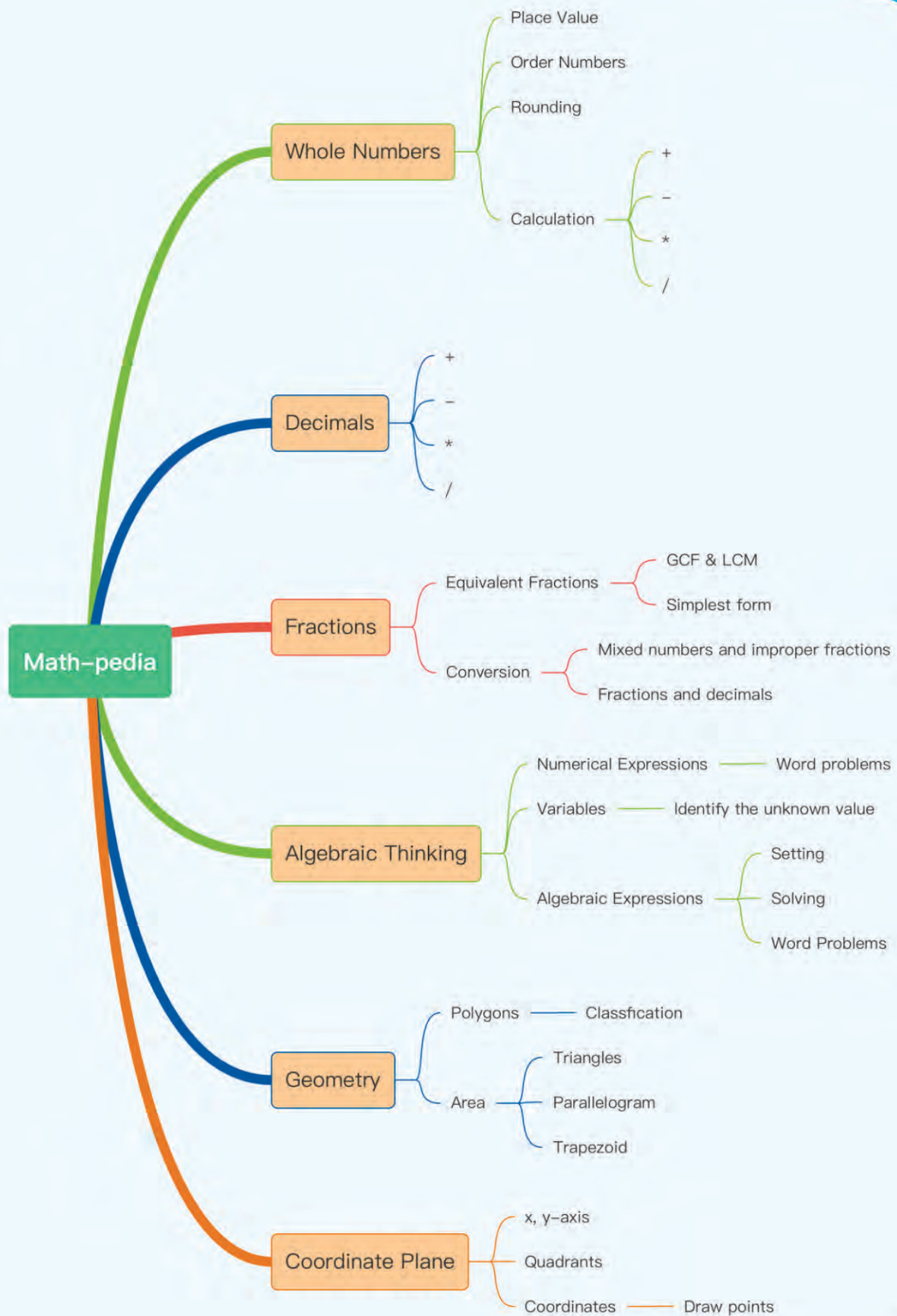


- Think Academy**自主研发的上课App**，给孩子带来更丰富的课上互动，包括举手上台，投票作答，选择填空，集体讨论等互动形式，保障**每3分钟一次互动**的频率，提升孩子的上课投入。
- 老师**实时观察每位孩子**的上课情况，保障孩子的学习体验与效果。

成就感带来底层学习动力

- 不仅课上学习高效，课后也有**完善的辅导答疑服务**。课后作业有视频解析，每周还有免费office hour解答孩子的问题，保障每节课都能学懂。
- 孩子在校内达到**成绩和进度双领先**。更愿意投入时间和精力在理科学习上，增强孩子的学习动力，自推成为**理科学霸**。







TASK 1

Place Value

Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths
8	2	4	6	.	7	3	9

The 4 can be named:
4 tens, or 40

The 7 can be named:
7 tenths, 7/10, or 0.7

Be careful of
the **decimal**
points

Standard Form: 8286.739

Expanded Form: $=8000+200+80+6+0.7+0.03+0.009$



Name the place of the underline digit. (5 coins each) 

2,624,998 4 is in the thousand place

4,244,365 _____ is in the _____ place

523,349 _____ is in the _____ place

51,632.41 _____ is in the _____ place

72,981.103 _____ is in the _____ place

Write each number in standard form. (5 coins each) 💰

$4000 + 300 + 20 \quad \underline{4320}$

$2000 + 100 + 24 \quad \underline{\hspace{2cm}}$

$3000 + 50 + 0.1 \quad \underline{\hspace{2cm}}$

$800 + 70 + 0.1 + 0.041 \quad \underline{\hspace{2cm}}$

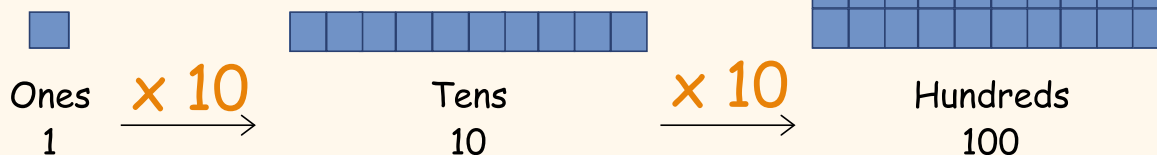
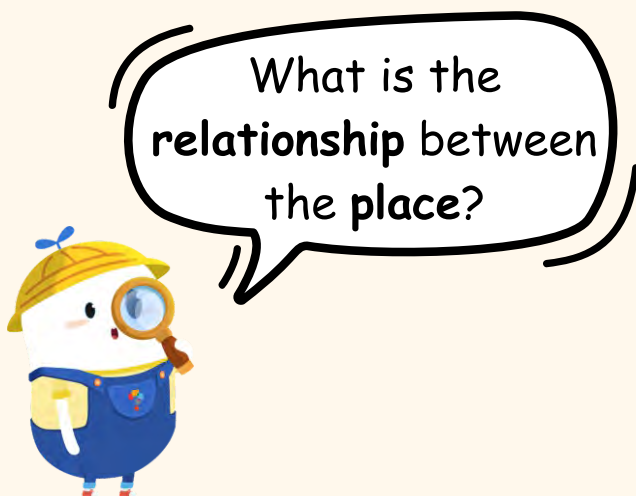
Write each number in expanded form. (5 coins each) 💰

$4271 \quad \underline{4000+200+70+1}$

$8060 \quad \underline{\hspace{2cm}}$

$6720.03 \quad \underline{\hspace{2cm}}$

$90320.78 \quad \underline{\hspace{2cm}}$





Place Value Pattern

Each place is 10 times as much as the place to its right.



200 is **10** times as much as 20,
 2000 is **10 X 10** times as much as 20

30.1 is **10** times as much as 3.01,
 300.1 is **10 X 10** times as much as 3.01

Multiply by the power of ten to find the product. (5 coins each) 

$$423,123 \times 100 = \underline{42,312,300}$$

$$321,110 \times 10 = \underline{\hspace{2cm}}$$

$$31.323 \times 100 = \underline{\hspace{2cm}}$$

$$76.124 \times 1000 = \underline{\hspace{2cm}}$$

$$25.272 \times 10000 = \underline{\hspace{2cm}}$$

$$23,234.110 \times 100 = \underline{\hspace{2cm}}$$



Notice the **power** of tens: the tens represents the place we need to move.

Attention!

Step 1: decide the # of place the decimal point move
 50,000 is 10 times as much as _____

 **50,000.0**  Thus, 50,000 is 10 times as much as **500,000**

Step 2: move the decimal point

 **50,000.0**  Thus, 50,000 is 10 times as much as **5,000**

Move the decimal point 1 place to the left



Pay attention to the **direction** of the decimal point movement.

Summary

20.0  **200.** **3.01**  **30.1**

Move the decimal point **one place** to the **right** to **increase** the number by **10 times**

200.  **20.0** **30.1**  **3.01**

Move the decimal point **one place** to the **left** to **decrease** the number by **10 times**

Use the place value pattern to fill in the missing number. (5 coins each) 

Solution:

89,000 is 10 times as much as 8,900

Step 1: decide the # of
place the decimal point move

89,000.0 $\longrightarrow$ 8,900.00

Step 2: move the decimal
point to the right to reduce

2005 is 100 times as much as _____

6.01 is 10 times as much as _____

_____ is 100 times as much as 3.41

_____ is 1000 times as much as 4.717

4.1001 is _____ as much as 410.01

73,600 is _____ as much as 763

9,100.24 is _____ as much as 910.024



Move the decimal to
decide the number

to the right $\longrightarrow$ enlarge

to the left $\longrightarrow$ reduce





TASK 2

Distributive Property

Distributive property states that multiplying the sum of two or more numbers is the same as **multiplying the numbers separately**.

Addition

$$a (b + c) = ab + ac$$

Subtraction

$$a (b - c) = ab - ac$$

Notice the sign



Example

$$\begin{aligned} &6 \times 14 \\ &= 6 \times (10 + 4) \\ &= (6 \times 10) + (6 \times 4) \\ &= 60 + 24 \\ &= 84 \end{aligned}$$

$$\begin{aligned} &6 \times 19 \\ &= 6 \times (20 - 1) \\ &= (6 \times 20) - (6 \times 1) \\ &= 120 - 6 \\ &= 114 \end{aligned}$$

Use the distributive property to multiply. Follow the example.

(5 coins each) 

$15 \times 27 = \underline{\hspace{2cm}}$

$9 \times 32 = \underline{\hspace{2cm}}$

$14 \times 36 = \underline{\hspace{2cm}}$

$11 \times 47 = \underline{\hspace{2cm}}$

$8 \times 39 = \underline{\hspace{2cm}}$

$18 \times 23 = \underline{\hspace{2cm}}$

$15 \times 11 = \underline{\hspace{2cm}}$

$26 \times 14 = \underline{\hspace{2cm}}$

$20 \times 19 = \underline{\hspace{2cm}}$

$12 \times 28 = \underline{\hspace{2cm}}$

Attention!

$$32 \times 12 = \underline{384}$$

$$32 \times 12$$

$$= 32 \times (10 + 2)$$

$$\begin{aligned} \times &= (32 + 10) \times (32 + 2) \\ &= 42 \times 34 \end{aligned}$$

The confusion of symbol

$$= 1428$$

$$32 \times 12$$

$$= 32 \times (10 + 2)$$

$$= (32 \times 10) + (32 \times 2)$$

$$= 320 + 64$$

$$= 384$$

Notice the **sign**, the wrong way cannot simplify the calculation.



If you fall into the trap, enhance by the follow extra practices.

$$32 \times 12 = \underline{\hspace{2cm}}$$

$$49 \times 91 = \underline{\hspace{2cm}}$$

$$57 \times 51 = \underline{\hspace{2cm}}$$

$$26 \times 29 = \underline{\hspace{2cm}}$$



Multi-Digit Multiplication

Multiply from right to left.

$$\begin{array}{r}
 \begin{array}{ccc}
 1 & 1 & 2 \\
 2 & 3 & 5 \\
 \hline
 11 & 7 & 5
 \end{array}
 \end{array}$$

Carrying over from $2 \times 5 + 1 = 11$
 Carrying over from $3 \times 5 + 2 = 17$
 Carrying over from $5 \times 5 = 25$

Calculate. (5 coins each) 

$57 \times 9 = \underline{\hspace{2cm}}$

$85 \times 7 = \underline{\hspace{2cm}}$

$21 \times 3 = \underline{\hspace{2cm}}$

$42 \times 8 = \underline{\hspace{2cm}}$

$37 \times 5 = \underline{\hspace{2cm}}$

$4 \times 69 = \underline{\hspace{2cm}}$

Attention!

$$235 \times 5 = \underline{1175}$$



$$\begin{array}{r} 1 \quad 1 \quad 2 \\ 235 \\ \times 5 \\ \hline 1075 \end{array}$$

Carrying over numbers



$$\begin{array}{r} 1 \quad 1 \quad 2 \\ 235 \\ \times 5 \\ \hline 1175 \end{array}$$

Don't miss the carrying over number



If you fall into the trap, enhance by the follow extra practices.

$$46 \times 3 = \underline{\hspace{2cm}}$$

$$21 \times 9 = \underline{\hspace{2cm}}$$

$$71 \times 5 = \underline{\hspace{2cm}}$$

$$6 \times 19 = \underline{\hspace{2cm}}$$



Multi-Digit Multiplication

Multiply the digits of the smaller number from right to left.

	2	1	2		
	1	2	7	3	
×			2	8	
1	0	1	8	4	← multiply 1,273 by 8 ones
2	5	4	6		← multiply 1,273 by 2 tens
3	5	6	4	4	← add

Calculate. (5 coins each) 💰

$76 \times 18 = \underline{\hspace{2cm}}$

$95 \times 26 = \underline{\hspace{2cm}}$

$79 \times 15 = \underline{\hspace{2cm}}$

$123 \times 13 = \underline{\hspace{2cm}}$

$85 \times 16 = \underline{\hspace{2cm}}$

$47 \times 24 = \underline{\hspace{2cm}}$

Attention!

$$134 \times 23 = \underline{3082}$$



$$\begin{array}{r} 134 \\ 23 \\ \hline 292 \\ 268 \\ \hline 550 \end{array}$$

add 1 that is carried over

more to the left by 1 place

add carry-over numbers



$$\begin{array}{r} 134 \\ 23 \\ \hline 402 \\ 268 \\ \hline 3082 \end{array}$$

Move to the left by 1 place value when multiplying by 2 tens



If you fall into the trap, enhance by the follow extra practices.

$$127 \times 13 = \underline{\hspace{2cm}}$$

$$371 \times 11 = \underline{\hspace{2cm}}$$

$$62 \times 15 = \underline{\hspace{2cm}}$$

$$723 \times 16 = \underline{\hspace{2cm}}$$



Multi-Digit Multiplication

Distributive property also can be applied to multi-digit multiplication.

Example:

$$\begin{aligned} & 23 \times 243 \\ &= 23 \times (200 + 40 + 3) \quad \text{write the larger number in extended form} \\ &= 23 \times 200 + 23 \times 40 + 23 \times 3 \\ &= 4600 + 920 + 69 \quad \text{distributive property} \\ &= 5589 \end{aligned}$$

Find the answer by distributive property. (5 coins each)



$32 \times 218 = \underline{\hspace{2cm}}$

$25 \times 196 = \underline{\hspace{2cm}}$

$39 \times 151 = \underline{\hspace{2cm}}$

$13 \times 430 = \underline{\hspace{2cm}}$

$85 \times 116 = \underline{\hspace{2cm}}$

$97 \times 104 = \underline{\hspace{2cm}}$



Division by 1-digit number

Use long division to divide larger number by one-digit number

1. Write the problem using a long division symbol.

$$3 \overline{)76}$$

2. To divide start with the leftmost (digit the tens digit).

$$\begin{array}{r} 2 \\ 3 \overline{)76} \\ \underline{-6} \\ 1 \end{array} \quad \leftarrow 3 \times 2 = 6$$

3. 1 is left over, bring it down to the ones digit.

$$\begin{array}{r} 25 \\ 3 \overline{)76} \\ \underline{-6} \downarrow \\ 16 \\ \underline{-15} \\ 1 \end{array} \quad \leftarrow 3 \times 5 = 15$$

4. We have 1 left over. There are no more digits to divide, so 1 is a remainder. The answer is $76 \div 3 = 25 \text{ R}1$. (comment Do not forget the remainder).

Tips:
You can check your answer by:
 $25 \times 3 + 1 = 76$



Find the answer by long division method (5 coins each) 

$78 \div 5 = \underline{\hspace{2cm}}$

$56 \div 7 = \underline{\hspace{2cm}}$

$99 \div 8 = \underline{\hspace{2cm}}$

$72 \div 9 = \underline{\hspace{2cm}}$

$88 \div 3 = \underline{\hspace{2cm}}$

$25 \div 2 = \underline{\hspace{2cm}}$

$45 \div 4 = \underline{\hspace{2cm}}$

$123 \div 4 = \underline{\hspace{2cm}}$

$233 \div 6 = \underline{\hspace{2cm}}$

$236 \div 7 = \underline{\hspace{2cm}}$

Attention!

$$76 \div 3 = \underline{25 \text{ R } 1}$$

$$\begin{array}{r} 25 \\ 3 \overline{)76} \\ \underline{-6} \downarrow \\ 16 \\ \underline{-15} \\ 1 \end{array}$$

✗ Check: $25 \times 3 \text{ } (-) 1 = 74$

✓ Check: $25 \times 3 + 1 = 76$

Notice: when we check the answer, we have to **plus the remainder**, rather than minus it.



If you fall into the trap, enhance by the follow extra practices.

$$148 \div 5 = \underline{\hspace{2cm}}$$

$$456 \div 6 = \underline{\hspace{2cm}}$$

$$298 \div 8 = \underline{\hspace{2cm}}$$

$$772 \div 9 = \underline{\hspace{2cm}}$$



Multi-Digit Division

Distributive property also can be applied to multi-digit multiplication.

Example: $83 \div 15 = \underline{34 \text{ R } 3}$

$$\begin{array}{r}
 34 \text{ R } 3 \\
 15 \overline{) 513} \\
 \underline{3 \times 15 = 45} \\
 63 \\
 \underline{4 \times 15 = 60} \\
 3 \leftarrow \text{Remainder}
 \end{array}$$

Follow all steps as 1-digit division. And Check the answer



Check: $34 \times 15 + 3 = 513$
 Add the remainder

Divide by long division method (5 coins each) 💰

$632 \div 46 = \underline{\hspace{2cm}}$

$456 \div 38 = \underline{\hspace{2cm}}$

$123 \div 11 = \underline{\hspace{2cm}}$

$832 \div 29 = \underline{\hspace{2cm}}$

$739 \div 21 = \underline{\hspace{2cm}}$

$294 \div 18 = \underline{\hspace{2cm}}$

$272 \div 16 = \underline{\hspace{2cm}}$

$1456 \div 25 = \underline{\hspace{2cm}}$

Summary Long division method

Step 1: Set up long division

$$\begin{array}{r} 3 \overline{)76} \end{array}$$

Step 2: To divide, start with the leftmost digit

$$\begin{array}{r} 2 \\ 3 \overline{)76} \\ -6 \\ \hline 1 \end{array} \quad \leftarrow 3 \times 2 = 6$$

Step 3: Minus, bring down the digit on next place

$$\begin{array}{r} 25 \\ 3 \overline{)76} \\ -6 \downarrow \\ \hline 16 \\ -15 \\ \hline 1 \end{array} \quad \leftarrow 3 \times 5 = 15$$

Step 4: Repeat the step 2 & 3, until the remainder is less than the divisor.

$$1 < 3$$

Step 5: Check: Quotient X Divisor + Remainder = Divided

$$25 \times 3 + 1 = 76$$



TASK 3

Apply the skill
into real life!



Word Problem

total price = amount X unit price

Example:

A fruit store recently sold 105 baskets of apples. The price of each basket of apples is 23 dollars. How much did these apples cost?

amount

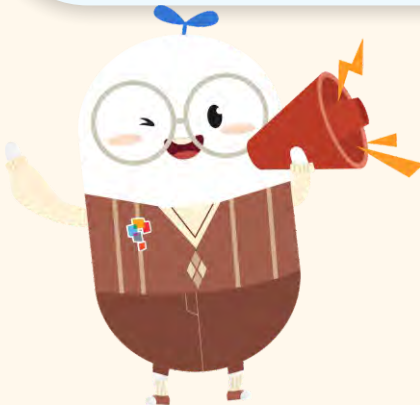
unit price

Step 1: identify the quantity ---- total price, amount, and unit price

amount = 105 baskets, unit price = 23 dollars per basket

Step 2: plug value in to formula.

total price = $105 \times 23 = 2415$ dollars



Hint: the price of
each usually
represent the unit
price

Word problems. (5 coins each) 

1. A bookstore sold 36 copies of a book, and each book costs 11 dollars. How much did they earn from selling these books?

2. If a car is traveling 63 miles per hour, how far will the car travel in 13 hours?

3. A store sold 42 backpacks, and each backpack costs 64 dollars. How much revenue did they generate from selling backpacks?

4. A farm harvested 85 watermelons, and each watermelon weighed 18 pounds. What was the total weight of the watermelons?

5. A factory produced 72 bicycles, and each bicycle had 27 gears. How many gears were produced in total?
6. A bakery made 56 cakes, and each cake had 3 layers. How many layers were there in total?
7. A school bought 198 calculators, and each calculator cost 32 dollars. How much did the school spend on calculators?
8. A garden has 75 rows of flowers, and each row has 16 flowers. How many flowers are there in total?

Congratulations!
You've completed all the Tasks.

Now! Scan the QR Code below to complete
the final challenge and redeem your **gifts!**



Scan the QR code and redeem your victory!



Bridge to Middle School

Place Value

600000.

1 1 1 1 1

You have learned



Scientific Notation

6×10^5

You will learn in G7

Operation of Whole Number

$$300 \times 7 = 2100$$

$$3 \times 7 = 21$$

You have learned



Operation of Negative Number

$$300 \times (-7)$$

You will learn in G7

Multiplication of Numbers

$$50 \times 3 + 50 \times 7 = 50(3 + 7)$$

You have learned



Multiplication of Polynomials

$$50(3a + 7) = 150a + 350$$

You will learn in G7

Division of Whole Numbers

$$87 \div 5 = 17 \text{ R } 2$$

You have learned



Division of Fractions

$$5 \frac{3}{4} \div 2 \frac{1}{2}$$

You will learn G6

Check List

☐

Addition and Subtraction

☐

Subtraction and Division

☐

Word Problems

☐

Quiz Time



REWARDS





TASK 1

Comparing and Order

To compare decimal numbers, compare the digits starting with the greatest place value.

Compare **64.24** and **64.205**

① Align the numbers in the place value chart

② Compare each digit starting from the left

Tens	Ones		Tenths	Hundredths	Thousandths
6	4	.	2	4	
6	4	.	2	0	5
6 = 6	4 = 4		2 = 2	4 > 0	

Align the numbers in the place value chart

③ Stop where the numbers are different

Therefore, $64.24 > 64.205$



Order the numbers from least to greatest. (5 coins each) 

3.25, 3.5, 3.125, 3.75, 3.87

3.125, 3.25, 3.5, 3.75, 3.875

0.125, 0.25, 0.0625, 0.5, 0.75

15.7, 15.75, 15.72, 15.705, 15.8

2.75, 2.5, 2.625, 2.875, 2.25

327.99, 37.1, 73.25, 19.05, 7.223, 15

Attention!

Compare 66.76 and 543.12.

 $\begin{array}{r} 66.76 \\ 543.12 \end{array}$

$6 > 5$, $66.76 > 543.12$

Step 1: Align the place value

 $\begin{array}{r} 66.76 \\ 543.12 \end{array}$

$5 > 0$, $543.12 > 66.76$

Step 2: Compare the place value from right to left



Align the place value!



Rounding Decimals

Case 1: If it is < 5 , add 0 to the preceding number, and remove the rest.

Case 2: If it is ≥ 5 , add 1 to the preceding number, and remove the rest.

Round **72.673** to its nearest **tenths**.

72.473 $\longrightarrow$ **72.5**

- ① **4** at the tenths place is to be rounded.
- ② The next digit to the right is **7**.
- ③ **7** $>$ 5, so 1 is added to **4** and **3** are removed.

Rounding. (5 coins each) 

Round 8.734 to the nearest tenth.

8.7

Round 2.1689 to the nearest hundredth.

Round 6.9999 to the nearest whole number.

Round 0.0254 to the nearest thousandth.

Round 47.8932 to the nearest hundredth.

Attention!

Round to the nearest tenths.

✗ 72.473 → 72.0

✓ 72.473 → 72.5

Look at the next digit to the right.
Since $7 > 5$, add 1 to 4, which is the preceding number.



Look at the next digit

If you fall into the trap, enhance by the follow extra practices.

Round 0.98765 to the nearest tenth.

Round 6.3333 to the nearest hundredth.

Round 5.8742 to the nearest tenth.

Round 3.14159 to the nearest hundredth.

Round 0.00789 to the nearest thousandth.

Summary

Round 341.92 to the nearest whole number.

Step 1: look at the number we want to round.

3 4 1 . 9 2
mark the digit in the one's place

Step 2: look at the next place value.

3 4 1 . 9 2

Step 3: Rounding.

$9 > 5$, so add 1 to one's digit, $1 + 1 = 2$.

so 342.



Case 1:

If it is < 5 , add 0 to the preceding number, and remove the rest.

Case 2:

If it is ≥ 5 , add 1 to the preceding number, and remove the rest.





Adding Decimals

Step 1: Line up the decimal points of the numbers.

$$\begin{array}{r} 12.6 \\ + 4.5 \\ \hline \end{array}$$

Step 2: Add the digits from right to left, just like you do with whole numbers.

$$\begin{array}{r} 12.6 \\ + 4.5 \\ \hline 1 \end{array}$$

Step 3: Carry over any excess to the next place value if the sum in a place value is 10 or greater.

$$\begin{array}{r} 12.6 \\ + 4.5 \\ \hline 71 \end{array} \quad (1 + 2 + 4)$$

Step 4: Continue adding digits to the left until all digits have been added. Place the decimal point in the answer directly below the decimal points in the numbers being added.

$$\begin{array}{r} 12.6 \\ + 4.5 \\ \hline 17.1 \end{array}$$

Don't miss the decimal point in the answer.



Add the decimals. (5 coins each) 

$5.25 + 2.75 = \underline{\hspace{2cm}}$

$2.85 + 6.51 = \underline{\hspace{2cm}}$

$10.2 + 4.8 = \underline{\hspace{2cm}}$

$34.2 + 9.1 = \underline{\hspace{2cm}}$

$0.75 + 0.25 = \underline{\hspace{2cm}}$

$0.98 + 0.13 = \underline{\hspace{2cm}}$

$7.8 + 2.345 = \underline{\hspace{2cm}}$

$4.2 + 7.171 = \underline{\hspace{2cm}}$

$6.123 + 0.9876 = \underline{\hspace{2cm}}$

$9.239 + 0.1454 = \underline{\hspace{2cm}}$

Attention!

Decimal points lined up	Incorrect Lining up the digits from the right side
$ \begin{array}{r} 12.5 \\ + 6.23 \\ \hline 18.73 \end{array} $ 	$ \begin{array}{r} 12.5 \\ + 6.23 \\ \hline 7.48 \end{array} $ 



Align the decimal point.

If you fall into the trap, enhance by the follow extra practices.

$9.14 + 8.14 = \underline{\hspace{2cm}}$

$4.99 + 4.11 = \underline{\hspace{2cm}}$

$54.9 + 7.3 = \underline{\hspace{2cm}}$

$38.2 + 5.8 = \underline{\hspace{2cm}}$



Subtracting Decimals

Step 1: Line up the decimal points of the numbers, just as in addition.

$$\begin{array}{r} 12.6 \\ - 4.5 \\ \hline \end{array}$$

Step 2: Begin subtracting from right to left.

$$\begin{array}{r} 12.6 \\ - 4.5 \\ \hline 1 \end{array}$$

Step 3: If the digit being subtracted is larger than the digit you're subtracting from, borrow from the next higher place value.

$$\begin{array}{r} \overset{0}{\cancel{1}} \overset{12}{2}.6 \\ - 4.5 \\ \hline 8 \ 1 \end{array} \quad 12 - 4 = 8$$

Step 4: Continue subtracting digits to the left until all digits have been subtracted. Place the decimal point in the answer directly below the decimal points in the numbers being subtracted.

$$\begin{array}{r} 12.6 \\ - 4.5 \\ \hline 8.1 \end{array}$$

do not forget to subtract 1 from the next digit if you borrow 1.



Subtract the decimals. (5 coins each) 

$16.2 - 2.55 = \underline{\hspace{2cm}}$

$5.12 - 1.69 = \underline{\hspace{2cm}}$

$19.2 - 2.7 = \underline{\hspace{2cm}}$

$163.1 - 23.9 = \underline{\hspace{2cm}}$

$0.93 - 0.18 = \underline{\hspace{2cm}}$

$189.9 - 29.3 = \underline{\hspace{2cm}}$

$62.8 - 4.18 = \underline{\hspace{2cm}}$

$91.1 - 52.31 = \underline{\hspace{2cm}}$

$96.41 - 23.236 = \underline{\hspace{2cm}}$

$23.39 - 11.44 = \underline{\hspace{2cm}}$



Multiply Decimals

$$2.56 \times 0.2$$

①
Ignore
the decimal
point and
multiply

		1	1				
		2	5	6	→	②	
X		0	.	2	→	①	
	0	.	5	1	2	→	③
							+

② Count from
the right and put
the point

$$4.12 \times 0.15$$

①
Ignore
the decimal
point and
multiply

			1				
		4	.	1	2	→	②
X		0	.	1	5	→	②
		2	0	6	0		
	+	4	1	2			
	0	.	6	1	8	0	→ ④
							+

② Count from
the right and put
the point

Multiply the decimals. (5 coins each)



$4.5 \times 2.6 = \underline{\hspace{2cm}}$

$1.2 \times 8.4 = \underline{\hspace{2cm}}$

$0.14 \times 2.36 = \underline{\hspace{2cm}}$

$1.84 \times 3.6 = \underline{\hspace{2cm}}$

$8.7 \times 1.39 = \underline{\hspace{2cm}}$

$81.7 \times 1.2 = \underline{\hspace{2cm}}$

$11.5 \times 1.7 = \underline{\hspace{2cm}}$

$32.5 \times 0.7 = \underline{\hspace{2cm}}$

$0.21 \times 5.21 = \underline{\hspace{2cm}}$

$12.1 \times 4.2 = \underline{\hspace{2cm}}$

Attention!

$$\begin{array}{r}
 2.56 \\
 \times 0.2 \\
 \hline
 51\textcircled{0}2
 \end{array}$$

✗

$$\begin{array}{r}
 2.56 \\
 \times 0.2 \\
 \hline
 0\textcircled{0}512
 \end{array}$$

✓



Add the number of decimal places from both decimals

If you fall into the trap, enhance by the follow extra practices.

$7.24 \times 0.14 = \underline{\hspace{2cm}}$

$49.9 \times 0.05 = \underline{\hspace{2cm}}$

$74.1 \times 1.3 = \underline{\hspace{2cm}}$

$12.2 \times 1.2 = \underline{\hspace{2cm}}$



Dividing Decimals

Dividing decimals by whole number

Divide. $5 \overline{) 2.720}$

The divisor is a whole number.
So divide directly

Answer: 0.544

$$\begin{array}{r}
 0.544 \\
 5 \overline{) 2.720} \\
 \underline{-0} \\
 27 \\
 \underline{-25} \\
 22 \\
 \underline{-20} \\
 20 \\
 \underline{-20} \\
 0
 \end{array}$$

add 0 to the quotient as needed

Continue the division until you have a remainder of 0



Divide the decimals by a whole number. (5 coins each) 

$$72.8 \div 5 = \underline{\hspace{2cm}}$$

$$63.1 \div 5 = \underline{\hspace{2cm}}$$

$$122.9 \div 5 = \underline{\hspace{2cm}}$$

$$109.3 \div 2 = \underline{\hspace{2cm}}$$

$$88.2 \div 3 = \underline{\hspace{2cm}}$$

$$96.3 \div 3 = \underline{\hspace{2cm}}$$

$$24.4 \div 4 = \underline{\hspace{2cm}}$$

$$88.1 \div 5 = \underline{\hspace{2cm}}$$

$$23.3 \div 5 = \underline{\hspace{2cm}}$$

$$39.02 \div 4 = \underline{\hspace{2cm}}$$

Attention!

$$\begin{array}{r}
 0.544 \\
 5 \overline{) 2.720} \\
 \underline{- 0} \\
 27 \\
 \underline{- 25} \\
 22 \\
 \underline{- 20} \\
 20 \\
 \underline{- 20} \\
 0
 \end{array}$$



Ans: $2.72 \div 5 = 0.54 \text{ R}2$



Ans: $2.72 \div 5 = 0.544$

Continue division until you have a **remainder of 0**



If you fall into the trap, enhance by the follow extra practices.

$152.8 \div 5 =$ _____

$53.1 \div 3 =$ _____

$312.8 \div 4 =$ _____

$211.4 \div 2 =$ _____



Dividing Decimals

Shifting the **decimal point to the right** to make the divisor a whole number.

$$\text{Divisor } 1.6 \overline{) 4.48} \text{ Dividend}$$

①

Multiply both the divisor and the dividend by 10. Shift the decimal point to the right until the divisor becomes a whole number.

$$\begin{array}{c} 1.6 \overline{) 4.48} \\ \times 10 \quad \times 10 \\ 16 \overline{) 44.80} \end{array}$$

②

Divide.

$$\begin{array}{r} 02.80 \\ 16 \overline{) 44.80} \\ \underline{-0} \\ 44 \\ \underline{-32} \\ 128 \\ \underline{-128} \\ 00 \\ \underline{-0} \\ 0 \end{array}$$

③

Place the decimal point in the quotient directly above the decimal point in the dividend.

Answer: 2.8

Remember to shift the decimal points in both divisor and dividend



Divide the decimals by a decimal. (5 coins each) 

$2.8 \div 0.5 = \underline{\hspace{2cm}}$

$3.75 \div 0.25 = \underline{\hspace{2cm}}$

$7.29 \div 1.5 = \underline{\hspace{2cm}}$

$8.64 \div 0.72 = \underline{\hspace{2cm}}$

$15.3 \div 0.6 = \underline{\hspace{2cm}}$

$66.3 \div 0.3 = \underline{\hspace{2cm}}$

$34.4 \div 0.4 = \underline{\hspace{2cm}}$

$4.03 \div 2.6 = \underline{\hspace{2cm}}$

$10.04 \div 0.2 = \underline{\hspace{2cm}}$

$19.38 \div 10 = \underline{\hspace{2cm}}$

Attention!



$$\begin{array}{r} 1.7 \overline{)9.37} \\ 1.7 \overline{)9.37} \end{array}$$



$$\begin{array}{r} 1.7 \overline{)9.37} \\ 1.7 \overline{)9.37} \end{array}$$



$$\begin{array}{r} 1.7 \overline{)9.37} \\ 1.7 \overline{)93.7} \end{array} \quad \begin{array}{l} \times 10 \\ \times 10 \end{array}$$

Multiply the divisor and dividend by the same number.



If you fall into the trap, enhance by the follow extra practices.

$1.93 \div 0.5 = \underline{\hspace{2cm}}$

$8.68 \div 6.2 = \underline{\hspace{2cm}}$

$9.25 \div 2.5 = \underline{\hspace{2cm}}$

$15.08 \div 2.9 = \underline{\hspace{2cm}}$



Distributive Property

Distributive property also can be used in **multiplication of decimals**.

Addition $a(b + c) = ab + ac \longrightarrow ab + ac = a(b + c)$
 take the common factor: **a** out

Example: $1.5 \times 1.3 + 1.5 \times 3.7$ 1.5 is the **common factor**
 take 1.5 out $= 1.5 \times (1.3 + 3.7)$
 $= 1.5 \times 5$
 $= 7.5$

Distributive property
 also be a fast
 calculation method.
 Subtraction also
 works



Use the distributive property to multiply. Follow the example.
 (5 coins each) 💰

$1.5 \times 2.3 - 1.5 \times 2.7 = \underline{\hspace{2cm}}$

$8.23 \times 0.09 + 8.23 \times 1.91 = \underline{\hspace{2cm}}$

$1.14 \times 0.3 - 0.14 \times 0.3 = \underline{\hspace{2cm}}$

$2.4 \times 3.09 - 2.4 \times 3 = \underline{\hspace{2cm}}$

$3.4 \times 2.79 + 3.4 \times 1.21 = \underline{\hspace{2cm}}$

$5.5 \times 1.82 - 5.5 \times 0.82 = \underline{\hspace{2cm}}$

Congratulations!
You've completed all the Tasks.

Now! Scan the QR Code below to complete
the final challenge and redeem your **gifts!**



Scan the QR code and redeem your victory!



Bridge to Middle School

Decimals

4.12, 0.12

You have learned



Number System

Rational Numbers: $4.\overline{4}$

Irrational Numbers: $\sqrt{2}$ π

You will learn in G7

Multiplication of Decimals

$$2.1 \times 15 = 31.5$$

$$\begin{array}{r} 21 \\ \times 15 \\ \hline 105 \\ + 210 \\ \hline 315 \end{array}$$

$21 \times 5 \rightarrow 105$ $21 \times 1 \leftarrow 210$

You have learned



Percent

Find the part by percent:

$$2.1 \times 15\% = 2.1 \times 0.15 = 0.315$$

You will learn in G6

Division of Decimals

$$44.8 \div 16 = 2.8$$

$$\begin{array}{r} 2.80 \\ 16 \overline{)44.80} \\ \underline{-0} \\ 44 \\ \underline{-32} \\ 128 \\ \underline{-128} \\ 00 \\ \underline{-0} \\ 0 \end{array}$$

You have learned



Percent

Find the whole by percent:

$$\begin{aligned} 44.8 \div 16\% \\ = 44.8 \div 0.16 \\ = 280 \end{aligned}$$

You will learn in G6



Addition of Fractions



Subtraction of Fractions



Operation of Mixed Numbers



Word Problems



Simplest Form

Write $\frac{4}{12}$ in lowest terms.

- Find the largest common factor of the numerator and the denominator.

Factors of 4: 1, 2, 4

Factors of 12: 1, 2, 3, 4, 6, 12

The largest common factor of 4 and 12 is 4.

- Divide the numerator and denominator by 4.

$$\frac{4 \div 4}{12 \div 4} = \frac{1}{3} \rightarrow \frac{4}{12}$$

written in lowest terms is $\frac{1}{3}$.

Divide the GCF of denominator and numerator to write the fraction in the simplest form.



Write the following fraction in the simplest form. (5 coins each)

$$\frac{6}{9}$$

$$\frac{12}{16}$$

$$\frac{12}{24}$$

$$\frac{24}{42}$$

$$\frac{49}{63}$$

$$\frac{27}{36}$$

Attention!

Find the simplest form of $\frac{12}{20}$

$$\frac{12}{20} \xrightarrow{\div 2} \frac{6}{10} \quad \text{✗}$$

$$\frac{12}{20} \xrightarrow{\div 4} \frac{3}{5} \quad \text{✓}$$



Always check if it is reduced to the simplest form.

If you fall into the trap, enhance by the follow extra practices.

$$\frac{3}{9}$$

$$\frac{48}{96}$$

$$\frac{25}{35}$$

$$\frac{28}{7}$$

$$\frac{64}{72}$$

$$\frac{36}{60}$$



Adding with Like Denominator

Add the numerator, keep the denominator stay the same.

1. Recognize the same denominators

$$\frac{1}{6} + \frac{2}{6} \rightarrow \text{Two denominator are the same}$$

2. Add the numerators

Keep the denominator be the same

$$\frac{1}{6} + \frac{2}{6} = \frac{1+2}{6} = \frac{3}{6} = \frac{1}{2}$$

Add the numerators

Simplify

3. Simplify to lowest terms

Add. Write each fraction in simplest form. (5 coins each) 💰

$$\frac{1}{7} + \frac{4}{7} = \underline{\hspace{2cm}}$$

$$\frac{3}{16} + \frac{7}{16} = \underline{\hspace{2cm}}$$

$$\frac{5}{12} + \frac{7}{12} = \underline{\hspace{2cm}}$$

$$\frac{13}{18} + \frac{5}{18} = \underline{\hspace{2cm}}$$

$$\frac{3}{8} + \frac{7}{8} = \underline{\hspace{2cm}}$$

$$\frac{6}{30} + \frac{9}{30} = \underline{\hspace{2cm}}$$



Least Common Multiple

Find the **least common multiple (LCM)** of 5 and 6.

1. List the multiples of each number.

Multiples of 5: 5, 10, 15, 20, 25, **30**

Multiples of 6: 6, 12, 18, 24, **30**

2. Find the smallest number that appears in both lists.

The least common multiple of 5 and 6 is **30**.

The LCM is the **smallest whole number** that is a multiple of each of two or more numbers



Find the LCM. (5 coins each) 

4 and 7.

3 and 12.

42 and 12.

8 and 36.

24 and 36.

45 and 60.



Adding with Unlike Denominator

When we have unlike denominators, find the **least common multiple (LCM)** to make the denominator equivalent.

1. Recognize the unlike denominators

Find the LCM:

Multiple of 4: 4, 8, 12

Multiple of 3: 3, 6, 9, 12

2. Change the denominator

Make the denominator equivalent

$$\frac{1}{4} + \frac{2}{3}$$

$$= \frac{1 \times 3}{4 \times 3} + \frac{2 \times 4}{3 \times 4}$$

3. Add the fraction

Add the fraction with like denominator

$$= \frac{3}{12} + \frac{8}{12}$$

4. Simplify to lowest terms

$$= \frac{11}{12}$$

The least common multiple (LCM) also can be called the least common denominator (LCD).



Add. Write each fraction in simplest form. (5 coins each) 

$$\frac{1}{4} + \frac{1}{3} = \underline{\hspace{2cm}}$$

$$\frac{3}{4} + \frac{3}{8} = \underline{\hspace{2cm}}$$

$$\frac{3}{10} + \frac{11}{25} = \underline{\hspace{2cm}}$$

$$\frac{5}{12} + \frac{2}{15} = \underline{\hspace{2cm}}$$

$$\frac{2}{3} + \frac{4}{5} = \underline{\hspace{2cm}}$$

$$\frac{16}{21} + \frac{3}{14} = \underline{\hspace{2cm}}$$

$$\frac{3}{8} + \frac{7}{12} = \underline{\hspace{2cm}}$$

$$\frac{1}{20} + \frac{4}{15} = \underline{\hspace{2cm}}$$

$$\frac{15}{16} + \frac{7}{12} = \underline{\hspace{2cm}}$$

$$\frac{3}{8} + \frac{3}{12} = \underline{\hspace{2cm}}$$

Attention!

Add. Write each fraction in simplest form. (5 coins each)

$$\frac{4}{5} + \frac{4}{9} = \frac{4}{\cancel{5+9}} = \frac{4}{14} = \frac{2}{7}$$

$$\frac{4}{5} + \frac{4}{9}$$

Unlike denominator fractions cannot be added directly.

$$= \frac{4 \times 9}{5 \times 9} + \frac{4 \times 5}{9 \times 5}$$

$$= \frac{36}{45} + \frac{20}{45}$$

Make the denominator equivalent, then add.

$$= \frac{36 + 20}{45}$$

Add numerators.

$$= \frac{56}{45}$$

To add fractions with unlike denominator, we have to make the denominator equivalent first





Subtracting with Like Denominator

1. Recognize the same denominators

$$\frac{5}{6} - \frac{1}{6} \rightarrow \text{Two denominator are the same}$$

2. Subtract the numerators

Keep the denominator be the same

Subtract the numerators

$$\frac{5}{6} - \frac{1}{6} = \frac{5-1}{6} = \frac{4}{6} = \frac{2}{3}$$

3. Simplify to lowest terms

Simplify

Subtract. Write each fraction in simplest form. (5 coins each) 

$$\frac{4}{7} - \frac{3}{7} = \underline{\hspace{2cm}}$$

$$\frac{12}{13} - \frac{4}{13} = \underline{\hspace{2cm}}$$

$$\frac{8}{9} - \frac{5}{9} = \underline{\hspace{2cm}}$$

$$\frac{4}{5} - \frac{3}{5} = \underline{\hspace{2cm}}$$

$$\frac{11}{16} - \frac{7}{16} = \underline{\hspace{2cm}}$$

$$\frac{17}{18} - \frac{5}{18} = \underline{\hspace{2cm}}$$



Subtracting with Unlike Denominator

When we have unlike denominators, find the **least common multiple (LCM)** to make the denominator equivalent.

1. Recognize the unlike denominators

Find the LCM:

Multiple of 4: 4, 8, 12, 16, **20**

Multiple of 5: 5, 10, 15, **20**

$$\frac{3}{4} - \frac{2}{5}$$

$$= \frac{3 \times 5}{4 \times 5} - \frac{2 \times 4}{4 \times 5}$$

2. Change the denominator

Make the denominator equivalent

3. Subtract the fraction

Subtract the fraction with like denominator

$$= \frac{15}{20} - \frac{8}{20}$$

4. Simplify to lowest terms

$$= \frac{7}{20}$$

Subtracting fractions also require the **equivalent denominators**.



Subtract. Write each fraction in simplest form. (5 coins each) 

$$\frac{1}{2} - \frac{3}{7} = \underline{\hspace{2cm}}$$

$$\frac{9}{13} - \frac{15}{26} = \underline{\hspace{2cm}}$$

$$\frac{5}{8} - \frac{13}{24} = \underline{\hspace{2cm}}$$

$$\frac{7}{9} - \frac{5}{12} = \underline{\hspace{2cm}}$$

$$\frac{15}{14} - \frac{12}{21} = \underline{\hspace{2cm}}$$

$$\frac{8}{15} - \frac{9}{20} = \underline{\hspace{2cm}}$$

$$\frac{25}{32} - \frac{7}{24} = \underline{\hspace{2cm}}$$

$$\frac{7}{9} - \frac{5}{12} = \underline{\hspace{2cm}}$$

$$\frac{1}{6} - \frac{1}{12} = \underline{\hspace{2cm}}$$

$$\frac{9}{20} - \frac{3}{10} = \underline{\hspace{2cm}}$$



Improper Fractions

Different Types of Fractions:

$$\frac{3}{5}$$

Smaller
Larger

Proper Fraction

$$\frac{9}{5}$$

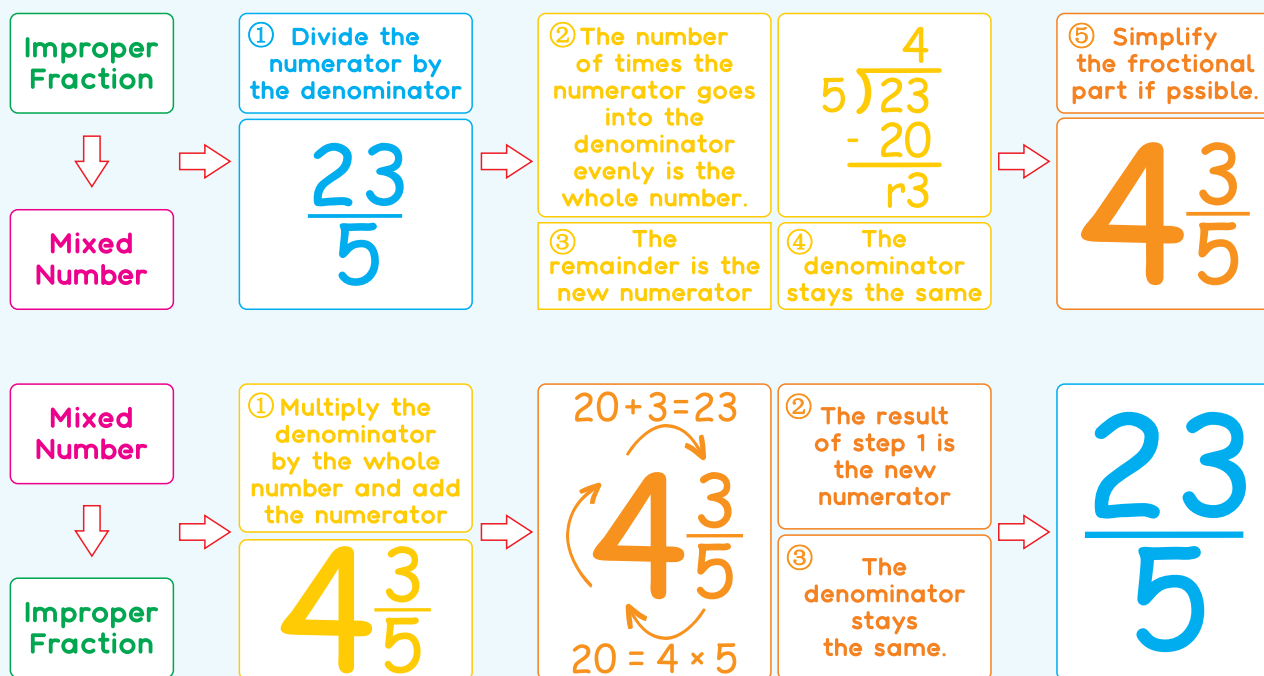
Larger
Smaller

Improper Fraction

$$2\frac{1}{3}$$

Mixed Fraction

Conversion of improper fractions and mixed numbers:



Convert the mixed number into the improper fraction. (5 coins each) 

$$3\frac{4}{5} = \frac{19}{5}$$

$$3 \times 5 + 4 = 19$$

$$1\frac{1}{8} = \underline{\hspace{2cm}}$$

$$2\frac{6}{7} = \underline{\hspace{2cm}}$$

$$5\frac{1}{2} = \underline{\hspace{2cm}}$$

$$2\frac{4}{13} = \underline{\hspace{2cm}}$$

$$2\frac{8}{9} = \underline{\hspace{2cm}}$$

Convert the improper fraction into the mixed number. (5 coins each) 

$$\frac{19}{11} = 1\frac{8}{11}$$

$$19 \div 11 = 1 \text{ R } 8$$

$$\frac{27}{4} = \underline{\hspace{2cm}}$$

$$\frac{43}{9} = \underline{\hspace{2cm}}$$

$$\frac{54}{3} = \underline{\hspace{2cm}}$$

$$\frac{18}{7} = \underline{\hspace{2cm}}$$

$$\frac{123}{5} = \underline{\hspace{2cm}}$$



Adding Mixed Numbers

To add mixed numbers, we can add whole numbers and fractions, respectively.

Try $3\frac{4}{5} + 2\frac{3}{10}$

1. Add the whole numbers.

$$= 3 + 2 = 5$$

Change the improper fraction into a mixed number

2. Add the fraction using the LCD.

$$= \frac{4}{5} + \frac{3}{10} = \frac{8}{10} + \frac{3}{10} = \frac{11}{10} = 1\frac{1}{10}$$

3. Combine these two answers. Make the denominator equivalent

$$3\frac{4}{5} + 2\frac{3}{10} = 5 + 1\frac{1}{10} = 6\frac{1}{10}$$

Add the whole numbers again to find the final answer.



Adding mixed number also requires the **equivalent denominator**.

Add. Write each fraction in simplest form. (5 coins each)

$$2\frac{1}{2} + 1\frac{1}{3} = \underline{\hspace{2cm}}$$

$$2\frac{3}{4} + 6\frac{1}{5} = \underline{\hspace{2cm}}$$

$$2\frac{1}{5} + 1\frac{2}{5} = \underline{\hspace{2cm}}.$$

$$3\frac{1}{2} + 2\frac{1}{3} = \underline{\hspace{2cm}}.$$

$$\frac{5}{6} + 2\frac{1}{4} = \underline{\hspace{2cm}}.$$

$$2\frac{7}{15} + 2\frac{3}{10} = \underline{\hspace{2cm}}.$$

$$4\frac{2}{3} + 5\frac{7}{8} = \underline{\hspace{2cm}}.$$

$$\frac{17}{4} + 3\frac{5}{6} = \underline{\hspace{2cm}}.$$

Attention!

Add. Write each fraction in simplest form. (5 coins each)

$$3\frac{4}{5} + 2\frac{3}{10} = 5 + \frac{11}{10} = 5\frac{11}{10} \quad \text{X}$$

$$3\frac{4}{5} + 2\frac{3}{10} = 5 + 1\frac{1}{10} = 6\frac{1}{10} \quad \text{✓}$$

After adding fractions,
convert the improper
fraction into mixed number





Subtracting Mixed Numbers

To add mixed numbers, we can add whole numbers and fractions, respectively.

Try $5\frac{3}{4} - 2\frac{1}{2}$

1. Subtract the whole numbers. $= 5 - 2 = 3$

2. Subtract the fraction using the LCD $= \frac{3}{4} - \frac{1}{2} = \frac{3}{4} - \frac{2}{4} = \frac{1}{4}$

Make the denominator equivalent

3. Combine these two answers $5\frac{3}{4} - 2\frac{1}{2} = 3\frac{1}{4}$

Subtract. Write each fraction in simplest form. (5 coins each) 

$$6\frac{5}{7} - 4\frac{3}{7} = \underline{\hspace{2cm}}$$

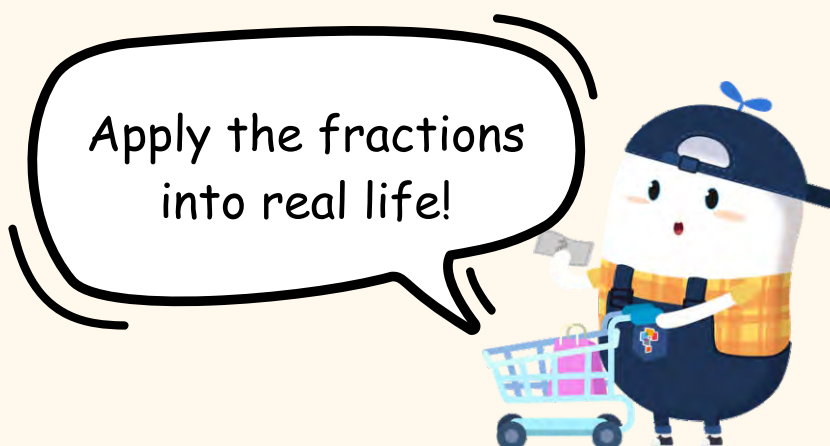
$$5\frac{3}{4} - 2\frac{5}{8} = \underline{\hspace{2cm}}$$

$$6\frac{8}{9} - 4\frac{7}{12} = \underline{\hspace{2cm}}$$

$$5\frac{1}{3} - 2\frac{1}{2} = \underline{\hspace{2cm}}$$

$$5\frac{3}{4} - 2\frac{5}{8} = \underline{\hspace{2cm}}$$

$$14\frac{11}{12} - 12\frac{7}{15} = \underline{\hspace{2cm}}$$



A garden had $8\frac{3}{4}$ pounds of tomatoes. If $3\frac{1}{2}$ pounds of tomatoes were used for cooking, how many pounds of tomatoes are left?

A bakery had $5\frac{2}{3}$ kilograms of flour. If $1\frac{1}{4}$ kilograms of flour were used for baking, how many kilograms of flour are left?

A construction site had $12\frac{1}{5}$ cubic meters of sand. If $4\frac{2}{3}$ cubic meters of sand were used for the foundation, how many cubic meters of sand are left?

A store had $15\frac{3}{8}$ liters of milk. If $7\frac{1}{2}$ liters of milk were sold, how many liters of milk are left?

A tank was filled with $20\frac{1}{4}$ gallons of water. If $9\frac{3}{4}$ gallons of water leaked, how many gallons of water are left in the tank?

A farmer harvested $18\frac{3}{5}$ bushels of corn. If $6\frac{1}{4}$ bushels of corn were sold, how many bushels of corn are left?

A restaurant had $14\frac{1}{2}$ kilograms of meat. If $5\frac{3}{4}$ kilograms of meat were used for cooking, how many kilograms of meat are left?

A classroom had $17\frac{2}{3}$ meters of cloth. If $9\frac{1}{5}$ meters of cloth were used for making curtains, how many meters of cloth are left?

A car had $22\frac{3}{4}$ gallons of fuel. If $11\frac{1}{3}$ gallons of fuel were used during the trip, how many gallons of fuel are left in the car?

A painter had $25\frac{2}{5}$ liters of paint. If $13\frac{3}{4}$ liters of paint were used for painting the walls, how many liters of paint are left?

Congratulations!
You've completed all the Tasks.

Now! Scan the QR Code below to complete
the final challenge and redeem your **gifts!**



Scan the QR code and redeem your victory!



Bridge to Middle School

Fractions

$$\frac{2}{4}$$

You have learned



Ratios

$$\frac{2}{4} = 2 : 4 = 2 \text{ to } 4$$

You will learn in G6

Equivalent Fractions

$$\frac{2}{4} = \frac{4}{8}$$

You have learned



Equivalent Ratios

$$2 : 4 = 4 : 8$$

You will learn in G6

Operations with Fractions

$$\frac{1}{3} + \frac{1}{4}$$

You have learned



Operation of Fractional Expressions

$$\frac{x}{3} + \frac{x^2}{6}$$

You will learn in G7

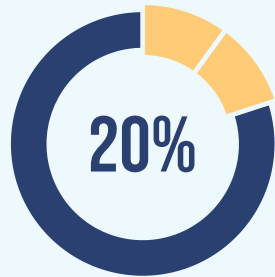


Fractional Equations

$$\frac{x}{3} + \frac{x}{6} = 9$$

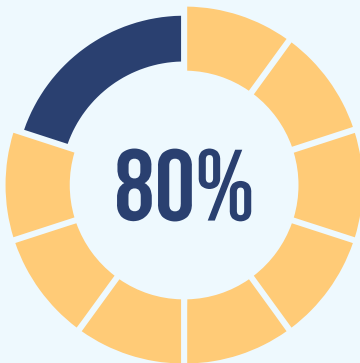
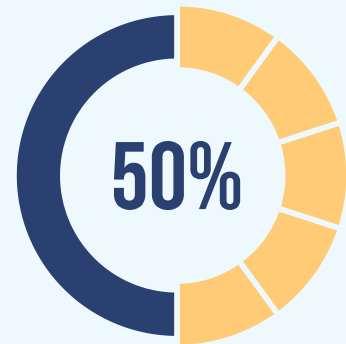
You will learn G6

Check List



Order of
Operations

Writing
Expressions



Word Problems



Quiz Time

REWARDS





Exponent

Exponents are a way to represent numbers that are being multiplied repeatedly by themselves.

$$6 \times 6 = 6^2$$

Base 6 Exponent 2

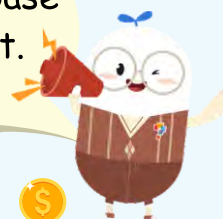
6 times it self twice.

$$\frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} = \left(\frac{1}{5}\right)^4$$

Base $\left(\frac{1}{5}\right)$ Exponent 4

1/5 times it self four times.

Identify the base and exponent.



Rewrite each expression using an exponent (5 coins each)



$4 \times 4 \times 4 = 4^3$

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

$3 \times 3 \times 3 \times 3 \times 3 =$

$\frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} =$

$6 \times 6 \times 6 \times 6 =$

$\frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} =$

Rewrite each expression in expanded form and find the value. 
(5 coins each)

$$4^2 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$2^4 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$5^3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$7^2 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$9^3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$3^4 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$5^4 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$4^5 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Attention!

$$4^3 = 4 \times 3 = 12 \quad \text{✗}$$

$$4^3 = 4 \times 4 \times 4 = 12 \quad \text{✓}$$

Exponent is the
repeated multiplication





Parentheses

Parentheses have the highest priority, the expression in the parentheses should be solved at first.

Without parenthesis:
solve from left to right

$$2 \times 4 + 6$$

→ Solve multiplication first

$$= 8 + 6$$

$$= 14$$

With parenthesis:

Solve the parenthesis

$$2 \times (4 + 6)$$

↓

$$= 2 \times 10$$

Solve the parentheses first.

$$= 20$$



Find the value of each expression. (5 coins each)



$$(8+12) \times 7 = \underline{\hspace{2cm}}$$

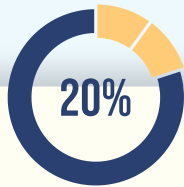
$$7 \times (9+2) = \underline{\hspace{2cm}}$$

$$2 \times (6 + 5) = \underline{\hspace{2cm}}$$

$$21 - (7 + 9) = \underline{\hspace{2cm}}$$

$$8 \div (8 - 4) = \underline{\hspace{2cm}}$$

$$36 \div (6 \times 2) = \underline{\hspace{2cm}}$$



Operations

The priority of the operation is decreasing from left to right

①	②	③	④		
P	E	M	D	A	S
Parentheses	Exponents	Multiply	Divide	Add	Subtract
()	e^2	($\times$)	($\div$)	($+$)	($-$)
		Left to Right (whichever comes first)		Left to Right (whichever comes first)	

Step 1: Solve the parenthesis;

Step 2: Solve the exponent;

Step 3: Solve the multiplication and division, from left to right;

Step 4: Solve the addition and subtraction, from left to right.

① Parenthesis

② Exponent

③ Multiplication

④ Division

$$15 \times (2 + 4) \div 3^2$$

$$= 15 \times 6 \div 3^2$$

$$= 15 \times 6 \div 9$$

$$= 90 \div 9$$

$$= 10$$

We can remember the order of the operation as PEMDAS.



Find the value of each expression. (5 coins each)



$$(12 - 8) \times 2 = \underline{\hspace{2cm}}$$

$$4 \times (3+2) \div 6 = \underline{\hspace{2cm}}$$

$$(44 \div 4) + (12 - 7) = \underline{\hspace{2cm}}$$

$$9 \times 6 - (7 + 9) = \underline{\hspace{2cm}}$$

$$21 \div (9 - 6) + (7 - 2) = \underline{\hspace{2cm}}$$

$$6^2 \div (3 \times 2) = \underline{\hspace{2cm}}$$

$$(4^3 \div 8) + (16 - 10) = \underline{\hspace{2cm}}$$

$$(7 \times 6 - 9) - (12 + 10) = \underline{\hspace{2cm}}$$

$$48 \div (18 - 6 \times 2) = \underline{\hspace{2cm}}$$

$$9^2 \div (4 \times 2+1) = \underline{\hspace{2cm}}$$

Attention!

Find the value of each expression. The priority:
Multiplication > Subtraction

$$\begin{aligned}
 & 3 \times (8 - 2 \times 3) \\
 &= 3 \times (6 \times 3) \\
 &= 3 \times 18 \\
 &= 48
 \end{aligned}$$


$$\begin{aligned}
 & 3 \times (8 - 2 \times 3) \\
 &= 3 \times (8 - 6) \\
 &= 3 \times 2 \\
 &= 6
 \end{aligned}$$




In the parenthesis, follow the order of PEMDAS.

If you fall into the trap, enhance by the follow extra practices.

$$(9 \times 2 - 9) - (8 + 1) = \underline{\hspace{2cm}}$$

$$72 \div (16 - 6 \times 2) = \underline{\hspace{2cm}}$$

$$(16 + 1 - 9) \div (2 \times 2) = \underline{\hspace{2cm}}$$

$$(6 \times 5 - 4 \times 3) \div (7 - 1) = \underline{\hspace{2cm}}$$

$$(32 \div 2 - 9) - (12 - 8) = \underline{\hspace{2cm}}$$

$$56 \div (17 - 3 \times 2 - 3) = \underline{\hspace{2cm}}$$

From Numbers

In Disneyland, the ticket price for adults is \$100 each.



2 adult tickets
cost _____ \$.

3 adult tickets
cost _____ \$.

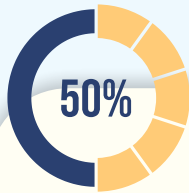


n adult tickets
cost _____ \$.



We can use a
letter to
represent the
unknown value!





Expressions

Expressions are mathematical phrases that contain numbers, variables, and operations.

variable $\times$ - number 6
operation

Variable: a symbol that represents a unknown value in a mathematical expression.



Find the expression. (5 coins each) 

In Disneyland, the ticket for adults is \$100 each, the ticket for children is 50\$.

3 adult tickets and 2 children will totally cost
_____ = _____ dollars.

4 adult tickets and 9 children will totally cost
_____ = _____ dollars.

m adult tickets and 9 children will totally cost
_____ = _____ dollars.

m adult tickets and n children will totally cost
_____ = _____ dollars.

Write the expression based on the phrase. (5 coins each) 

3 less than k _____

5 less than x _____

The sum of x and 3 _____

12 divided by x _____

7 less than 2x _____

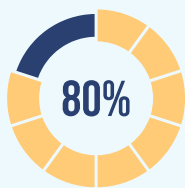
9 minus 4x _____

5x more than 2 _____

9 multiplied x, and add three _____

The sum of 9 times x and 8 times y _____

The difference between 12 times x and 8 times y _____



Word Problems

Key words to tackle the word problem.

Addition	Subtraction
in all	decreased by
more than	less
combined	take away
all together or altogether	difference
total	less than
sum	fewer than
plus	left, left over
added to	smaller than
greater than	how many more
abcess	remaining

Multiplication	Division
times	per
multiplied by	out of
times more (two times more)	each gets/each has
product of	divided equally
twice as much, three times..	fraction of
each (in each box, they each got two...)	equal pieces, an equal amount
every	split

Let's tackle the word problem. (5 coins each)



Jack has 15 bags of candies, he gave x bags to John and got 7 bags left. Find x .

Mike bought a toy which cost 39.5 dollars. He paid 50 dollars and got back x dollars. Find x .

The construction team worked on a 90km long road. They built 4.5 km each day and they worked for x days. Find x .

The grocery store has 326 bags of raisin in store, the manager decided to order x bags. Now there are 518 bags of raisin in store. Find x .

Students has made 90 paper flowers in total. Boys made x flowers, and girls made twice as many flowers as boys. Find x .

There is a stack of printer paper with 492 sheets, x sheets have been used, and 118 sheets are left. Find x .

Apples are x dollar per kilogram. Mom paid 20 dollar to buy 2kg of apples and got 1.4 dollar back. Find x .

The school cafeteria has ten tons of flour in store. The cafeteria uses up x amount of flour every month on average. After three months, the school had only 2.5 tons of flour left. Find x .

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Scan the QR code and redeem your victory!

Bridge to Middle School

Exponents

$$6^2$$

$$= 6 \times 6$$

$$= 36$$

You have learned



Exponents Formula

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$\frac{a^n}{a^m} = a^{n-m}$$

$$(x^a)^b = x^{ab}$$

$$x^a \times x^b = x^{a+b}$$

You will learn in G7

Algebraic Expressions

$$3x + 2$$

You have learned



Linear Equations

$$3x + 2 = y$$

You will learn in G6



Linear Inequalities

$$3x + 2 > 4$$

You will learn in G7

Task 1

Polygons

Task 2

Triangles

Task 3

Parallelograms

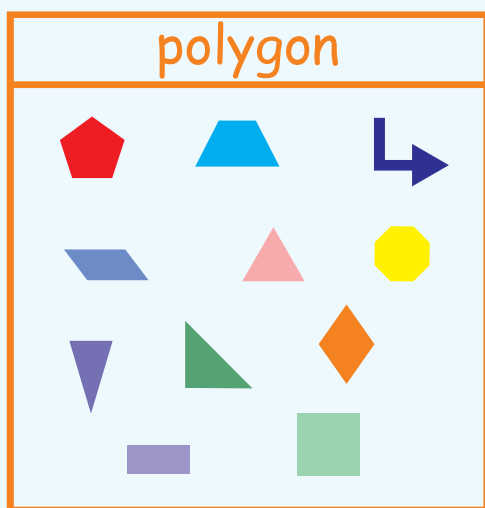
Task 4

Trapezoids



Polygons

A polygon is a simple (it does not cross itself) closed figure made up of line segments (not curves) in a two-dimensional plane.



Name the Polygons

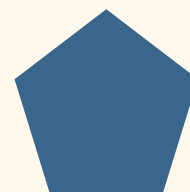
Polygons are classified by the number of sides and vertices they have.



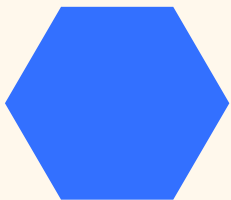
Triangles
of Sides: 3



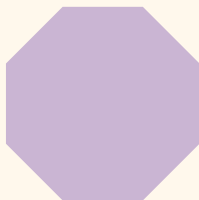
Quadrilaterals
of Sides: 4



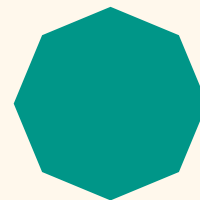
Pentagons
of Sides: 5



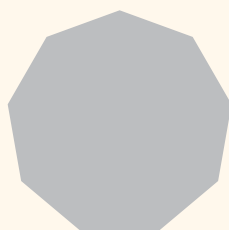
Hexagon
of Sides: 6



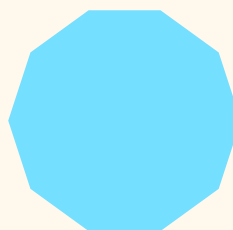
Heptagons
of Sides: 7



Octagons
of Sides: 8



Nonagon
of Sides: 9



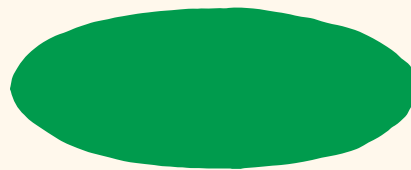
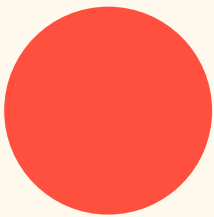
Dodecagon
of Sides: 10

If all of the sides are the same length, the shape is regular. If they are not the same length, it is irregular.

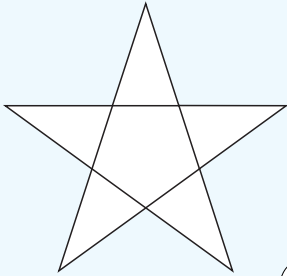


Task 1

Determine if the shape is a polygon, if it is, how many sides does it have? (5 coins each) 



Attention!



This is a polygon!



No! That is not polygon!
A polygon cannot cross itself.
Therefore, the figure below
is not a polygon.



Match the name and the polygon below.



Parallelogram



Triangle

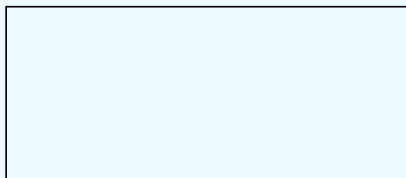


Rectangle



From Rectangles to Triangles

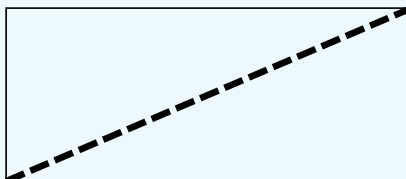
Length



Width

Area of the Rectangle
= Length X Width

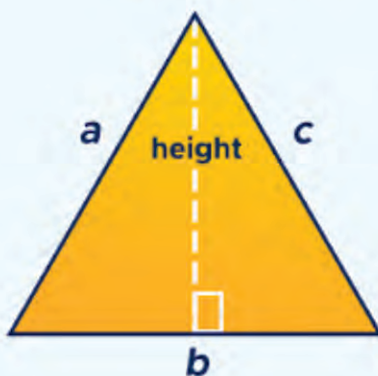
Length



Width

Area of the Triangle
= $\frac{1}{2}$ X Length X Width

Area and Perimeter of a Triangle



$$\text{Area} = \frac{1}{2} bh$$

where:
 b =base ; h =height

$$\text{Perimeter} = a+b+c$$

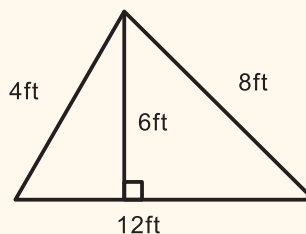
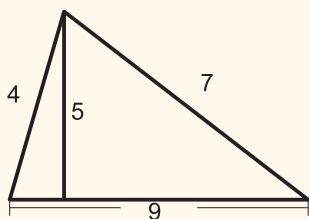
where:
 a, b, c = the triangle's sides

Area of the triangle is the half of the area of the rectangle.



Task 2

Find the perimeter and the area of the triangle below. (5 coins each) 💰



Answer:

Perimeter:

$$P = a + b + c$$

$$P = 4 + 7 + 9$$

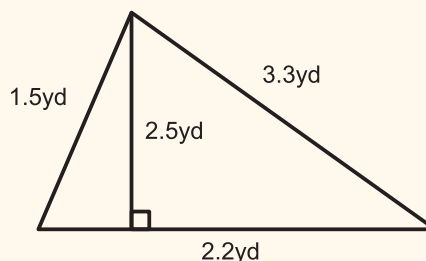
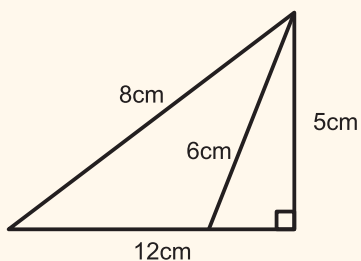
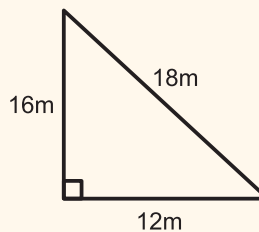
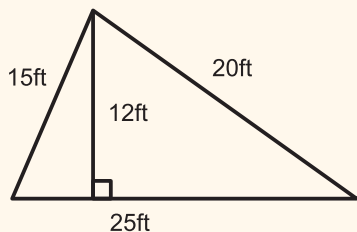
$$P = 20$$

Area:

$$A = \frac{1}{2}bh$$

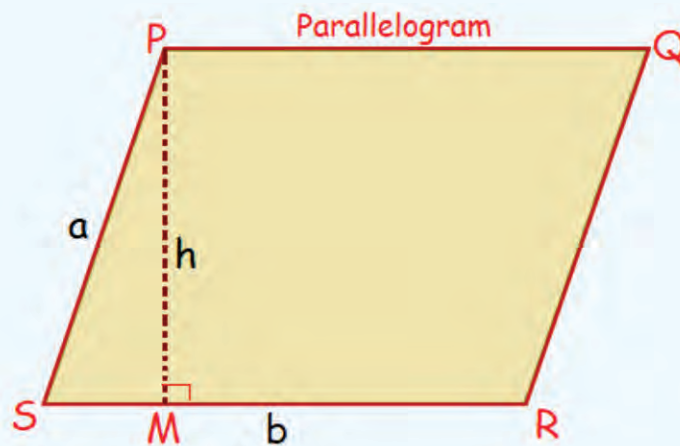
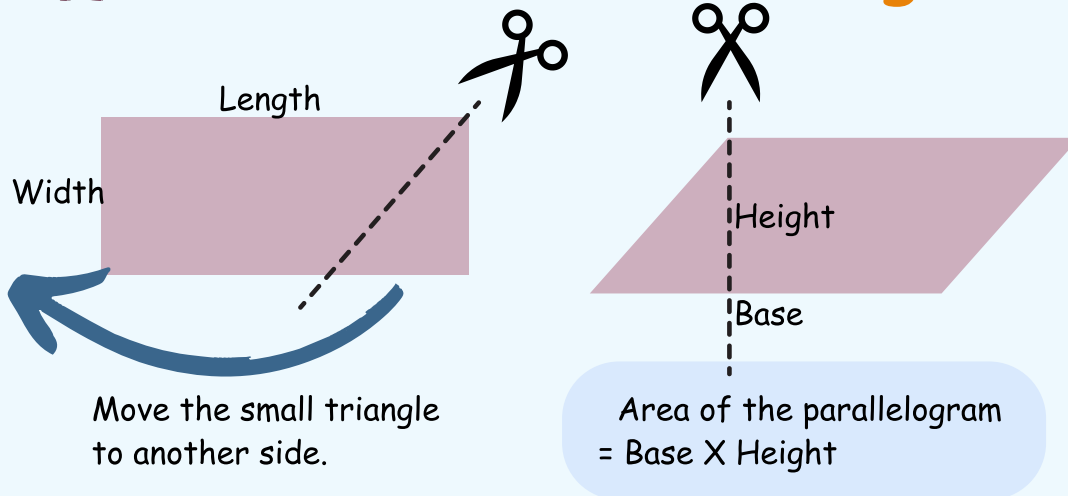
$$A = \frac{1}{2}(9)(5)$$

$$A = \frac{45}{2}$$





From Rectangles to Parallelograms



Perimeter of a parallelogram (P) = 2(sum of the adjacent sides)

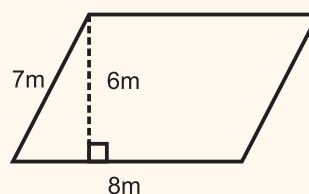
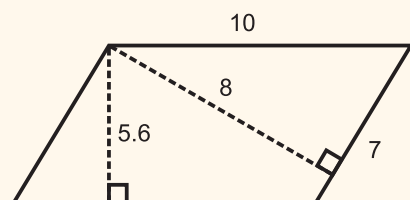
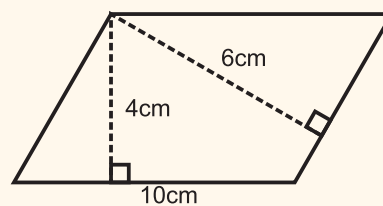
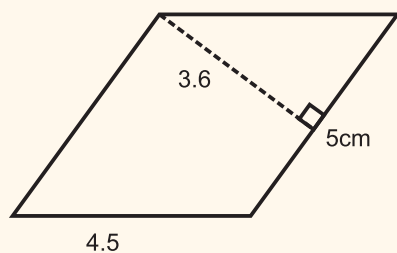
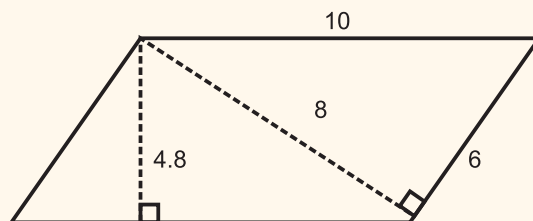
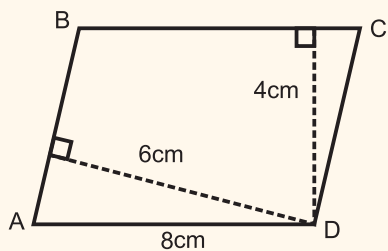
$$= 2(a + b)$$

Area of a parallelogram (A) = base $\times$ height

$$= b \times h$$

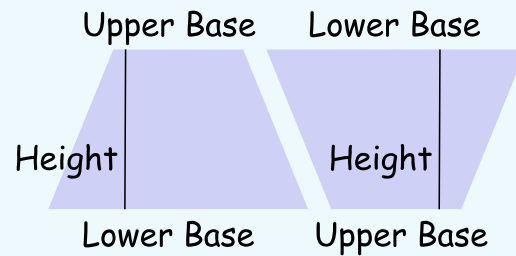
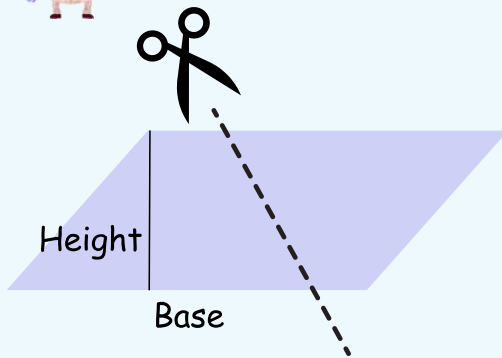
Task 3

Find the area of the parallelogram. (5 coins each)





From Parallelograms to Rectangles



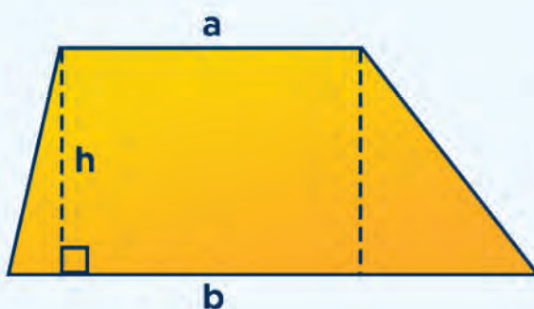
Area of the parallelogram
= Base X Height



Base = Lower Base + Upper Base

Area of the Trapezoid
= $\frac{1}{2}$ (Lower Base + Upper Base) X Height

Area of a Trapezoid



$$A = \frac{a + b}{2} h$$

Where:

A = Area of a Trapezoid

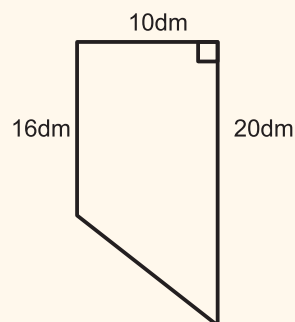
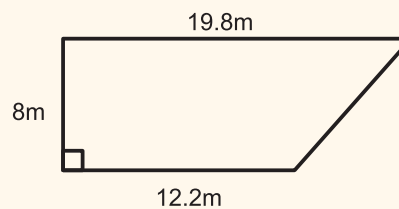
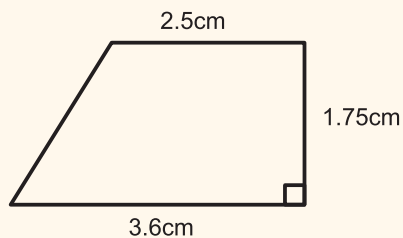
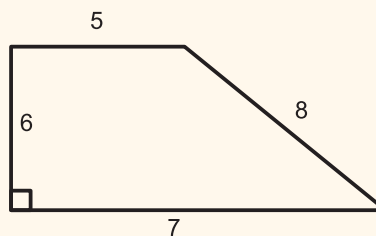
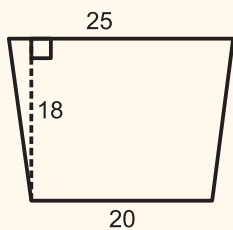
a = length of base 1

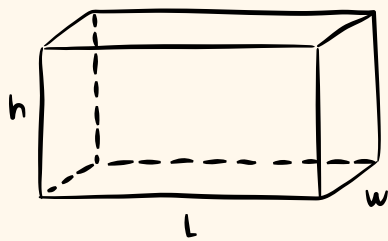
b = length of base 2

h = height of the trapezoid

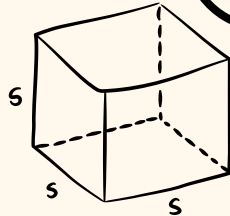
Task 4

Find the area of the trapezoids below. (5 coins each) 





$$V = Lwh$$



$$V = s^3$$

Apply the geometry
into real life!



Henry built a rectangular prism-shaped bookshelf that is 2 m long, 1.5 m wide, and 2.5 m high. Books for the shelf cost 3.20 per cubic meter dollars each. How much will it cost to fill the bookshelf with books?

Emma constructed a rectangular prism-shaped water tank that measures 3 m in length, 2 m in width, and 4 m in height. If the cost of filling the tank with water is 2.50 dollars per cubic meter, what is the total cost?

William is building a rectangular prism-shaped storage container that measures 4 m in length, 3 m in width, and 2 m in height. If the cost of filling the container with sand is 4.60 dollars per cubic meter, what is the total cost?

Olivia is designing a rectangular prism-shaped fish tank that is 5 m long, 3 m wide, and 2.5 m high. If the cost of filling the tank with water is 3.50 dollars per cubic meter, what is the total cost?

Robert is constructing a rectangular prism-shaped pool that measures 6 m in length, 4 m in width, and 2 m in height. If the cost of filling the pool with water is 5.25 dollars per cubic meter, what is the total cost?

Sophia is building a rectangular prism-shaped sandbox that is 3 m long, 2.5 m wide, and 1.5 m high. Sand for the sandbox costs 4.75 dollars per cubic meter. How much will it cost to completely fill the sandbox with sand?

Michael is constructing a rectangular prism-shaped storage room that measures 7 m in length, 5 m in width, and 3 m in height. If the cost of filling the room with boxes is 6.40 dollars per cubic meter, what is the total cost?

Emily is building a rectangular prism-shaped container that measures 4 m in length, 3 m in width, and 2 m in height. If the cost of filling the container with sand is 3.75 dollars per cubic meter, what is the total cost?

Congratulations!
You've completed all the Tasks.

Now! Scan the QR Code below to complete
the final challenge and redeem your **gifts!**



Scan the QR code and redeem your victory!

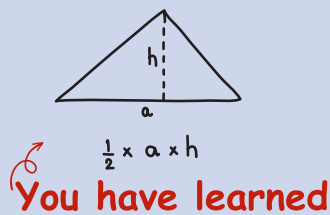


Bridge to Middle School

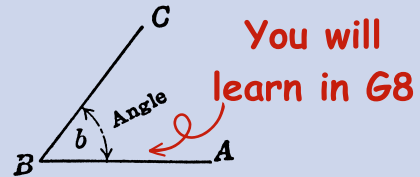
Polygons



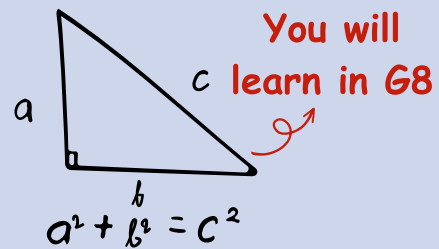
Area of Triangles



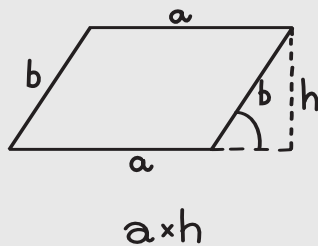
Angles



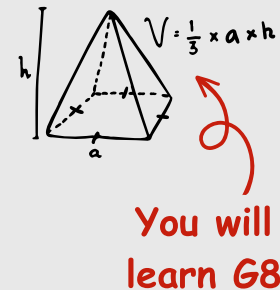
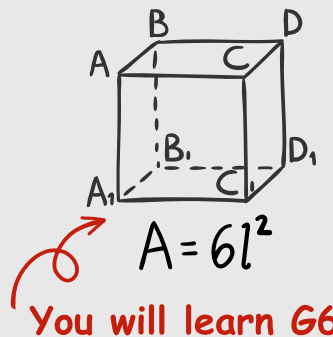
Pythagorean Theorem



Area of Polygons



Surface Area and Volume of 3D Shapes





x, y - axis,

Quadrants

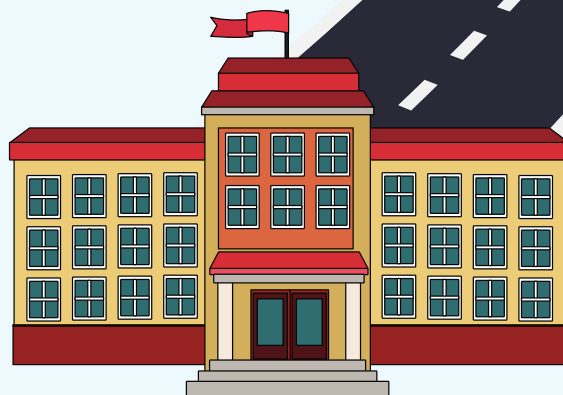
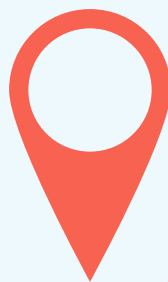


Coordinates



Points

Quiz

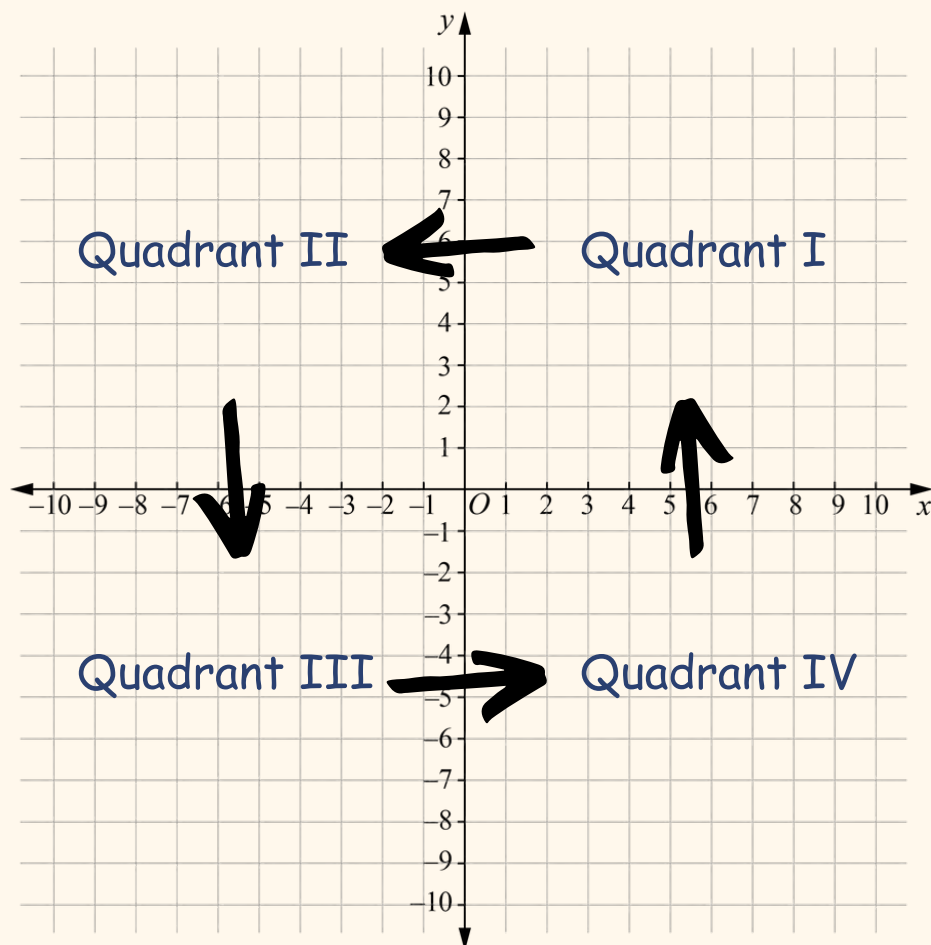


Middle School

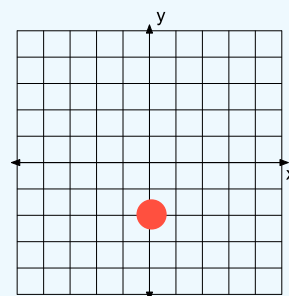
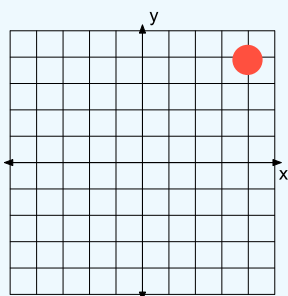
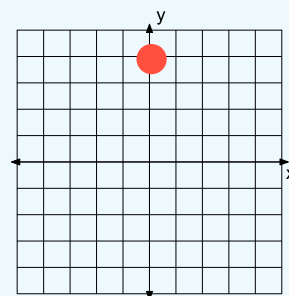
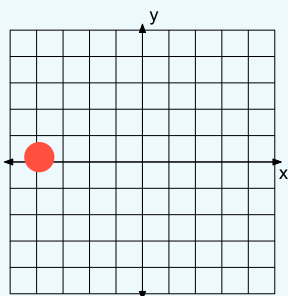
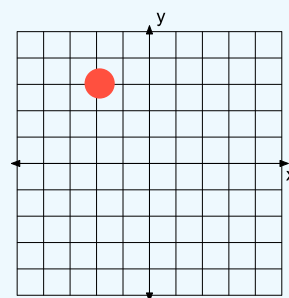
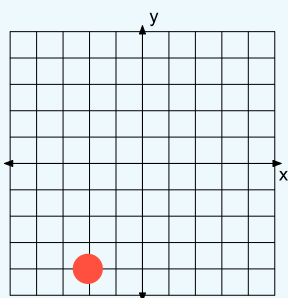
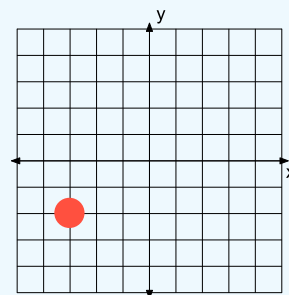
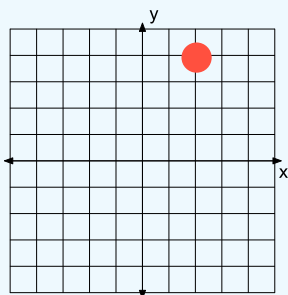


x, y-axis and Quadrants

The coordinate plane is formed by two perpendicular lines called the x-axis and y-axis. The origin is the center of the coordinate plane. It has coordinates $(0, 0)$.



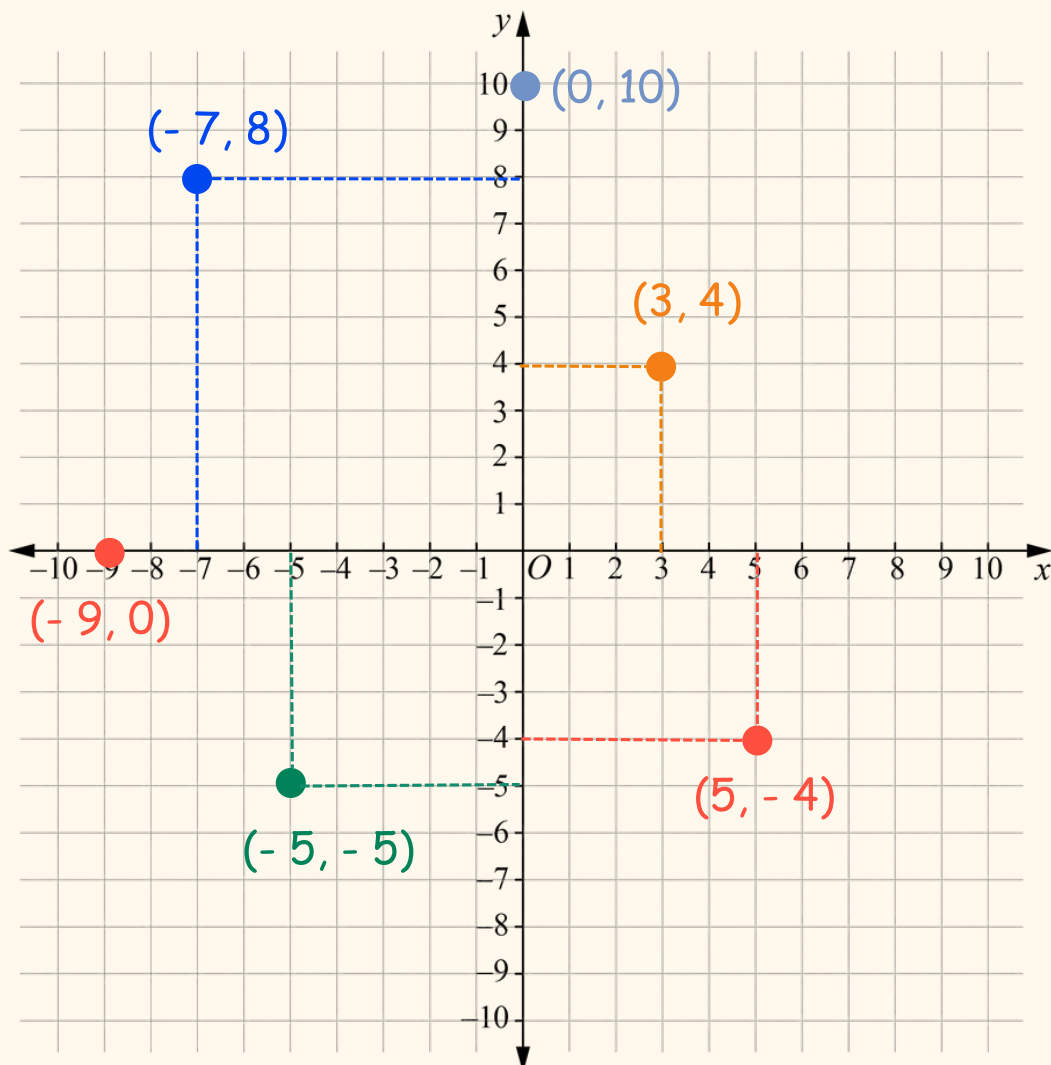
Identify the quadrant or the axis the point belongs to. (5 coins each)



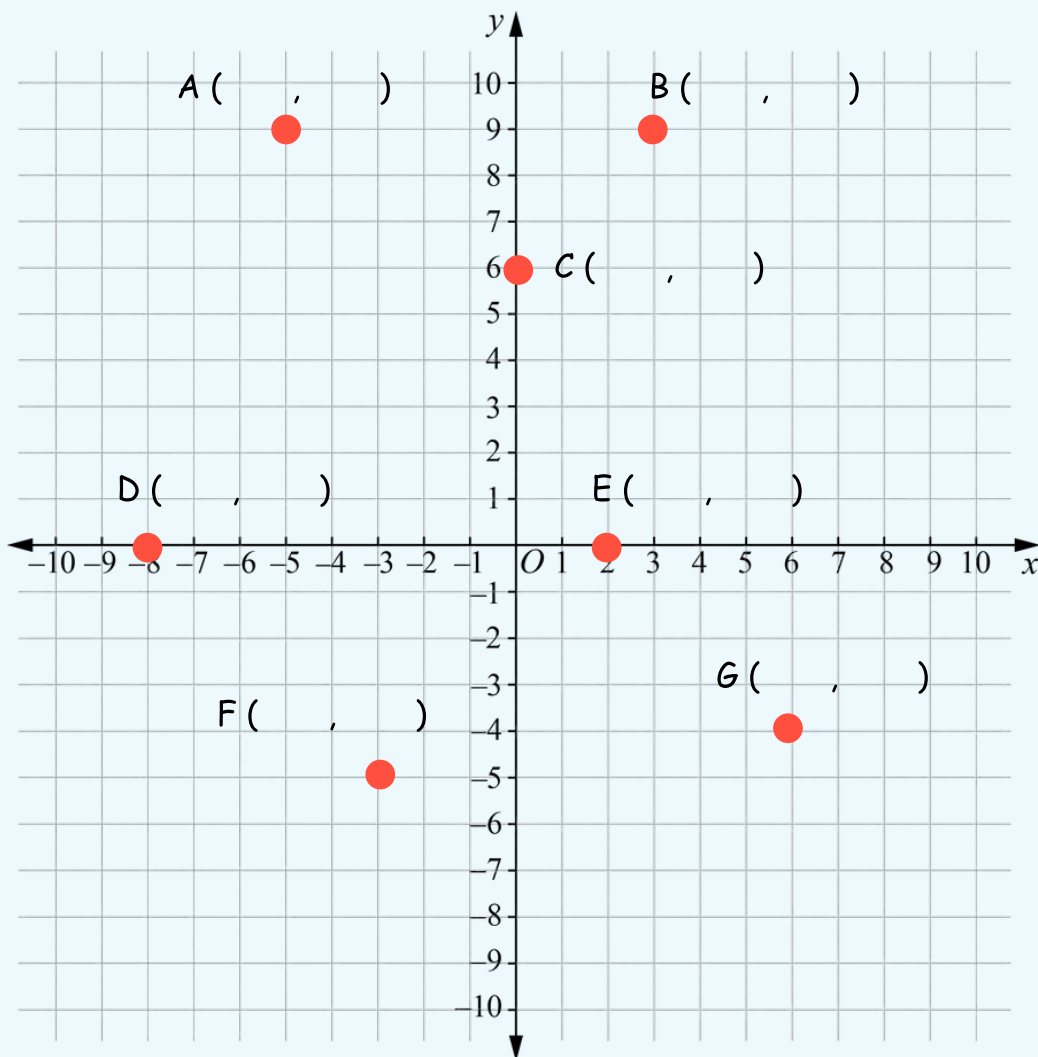


Points in Coordinate Plane

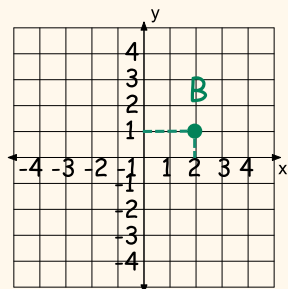
An ordered pair is a pair of numbers that represents a unique point in the coordinate plane. The first value is the x-coordinate and the second value is the y-coordinate, also can be written as (x, y) .



Find the coordinates of the point. (5 coins each) 



Attention!



B (1 , 2)



B (2 , 1)

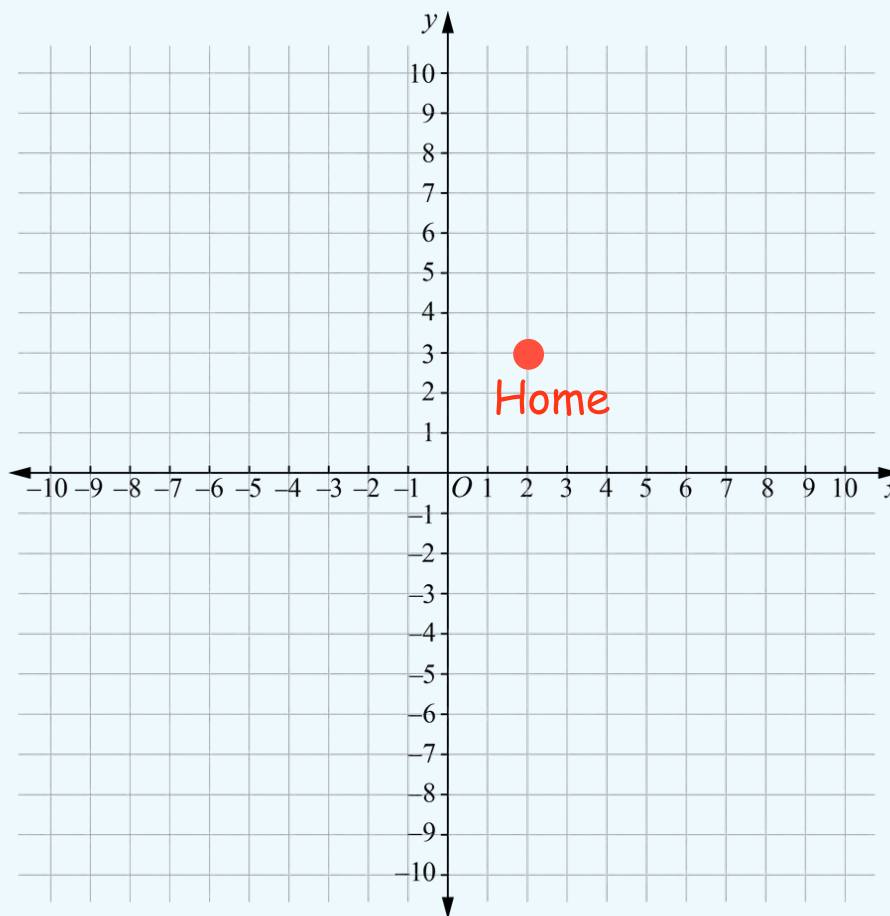


Not to reverse the
xy-coordinates



The coordinate plane is used for many real life applications, such as maps and data visualization. We can use points to represent a real life situation and plot on the coordinate plane.

Lisa lives at 2nd Avenue and 3rd Street, represented by $(2, 3)$ on the graph. Her school is at 4th Avenue and 7th Street, represented by $(4, 7)$ on the graph.



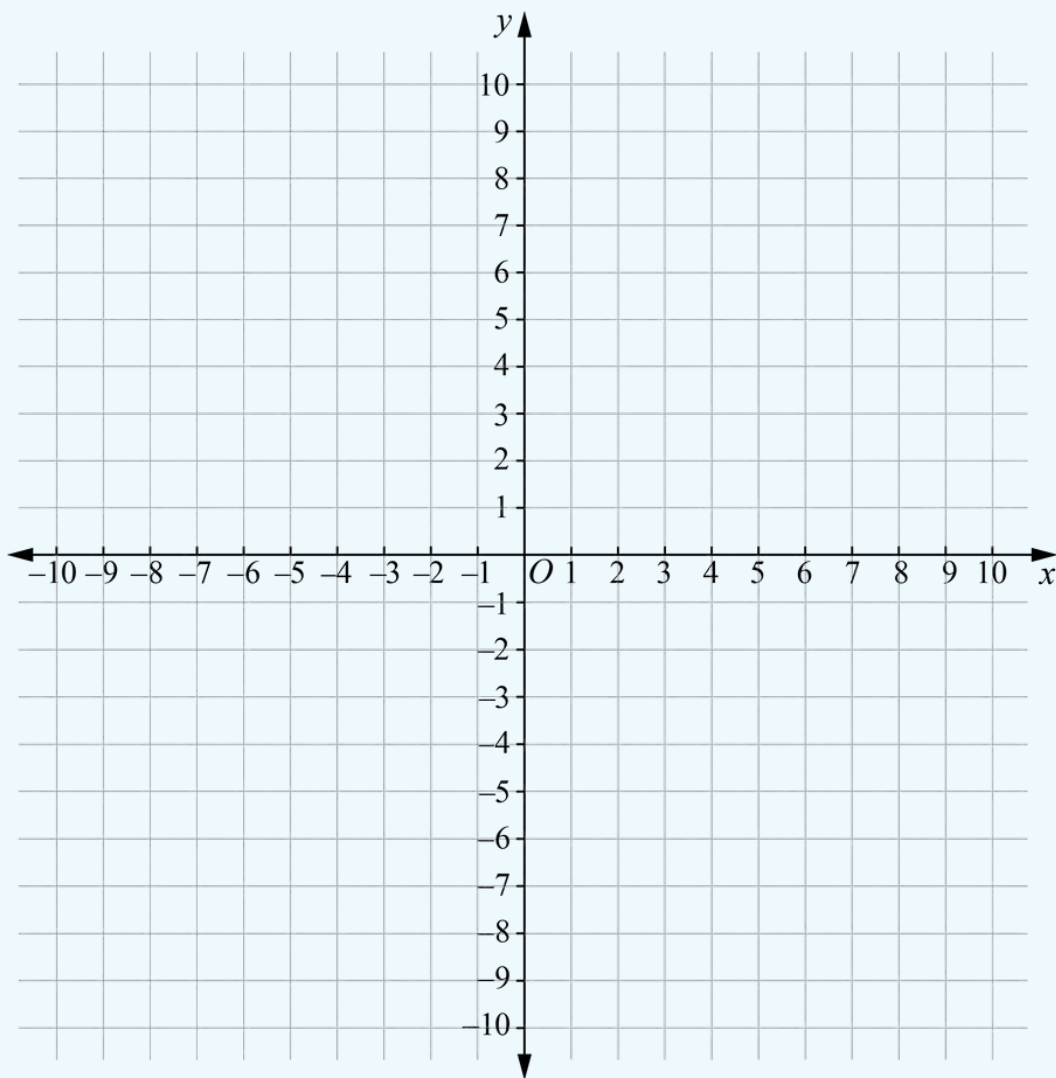
Coach John is tracking the soccer players' performance. Each ordered pair represents the number of goals and number of assists, respectively, from one player. (5 coins each) 

Player 1: (3,4)

Player 2: (6,1)

Player 3: (9,6)

Player 4: (2,1)



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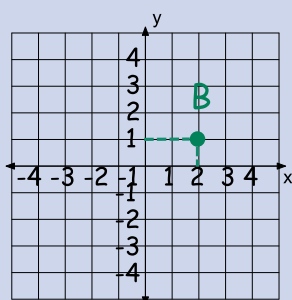


Bridge to Middle School

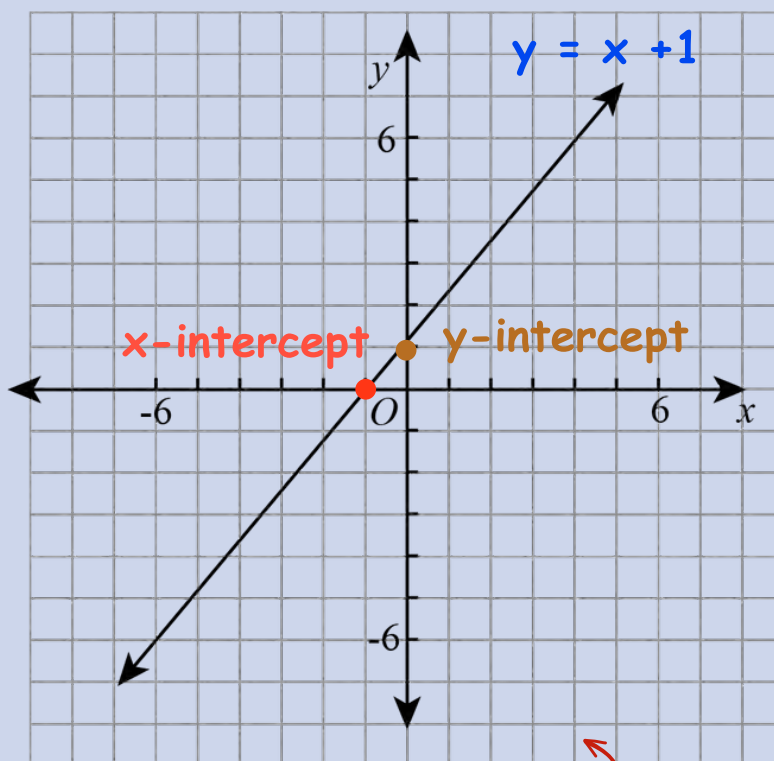
Points in the
coordinate plane



Linear Equations

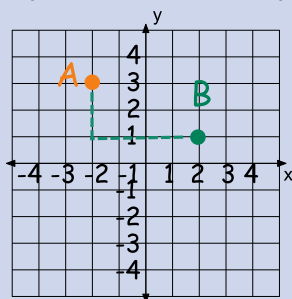


You have learned



Transformation of Points

You will learn in G8



A to B:
move down 2 units, and 4
units to the right

You will learn in G7

Whole number Answer

place value:

4,244,365 2 is in the millions place
523,349 3 is in the thousands place
51,632.41 4 is in the tenths place
72,981.103 3 is in the thousandths place

$2000+100+24 = 2,124$
 $3000+50+0.1 = 3,050.1$
 $800+70+0.1+0.041 = 870.141$

$8060 = 8,000+60$
 $6720.03 = 6,000+700+20+0.03$
 $90320.78 = 90,000+300+20+0.78$

place value pattern:

$321,110 \times 10 = 3,211,100$
 $31.323 \times 100 = 3,132.3$
 $76.124 \times 1000 = 76,124$
 $25.272 \times 10000 = 252,720$
 $23,234.110 \times 100 = 2,323,411$

2,005 is 100 times as much as 20.05
6.01 is 10 times as much as 0.601
341 is 100 times as much as 3.41
4,717 is 1000 times as much as 4.717
4.1001 is 0.01 times as much as 410.01
73,600 is 100 times as much as 736
9,100.24 is 10 times as much as 910.024

Distributive Property

$$\begin{aligned}
 15 \times 27 &= 15 \times (20 + 7) = 15 \times 20 + 15 \times 7 = 300 + 105 = 405 \\
 9 \times 32 &= 9 \times (30 + 2) = 9 \times 30 + 9 \times 2 = 270 + 18 = 288 \\
 14 \times 36 &= 14 \times (30 + 6) = 14 \times 30 + 14 \times 6 = 420 + 84 = 504 \\
 11 \times 47 &= 11 \times (40 + 7) = 11 \times 40 + 11 \times 7 = 440 + 77 = 517 \\
 8 \times 39 &= 8 \times (30 + 9) = 8 \times 30 + 8 \times 9 = 240 + 72 = 312 \\
 18 \times 23 &= 18 \times (20 + 3) = 18 \times 20 + 18 \times 3 = 360 + 54 = 414 \\
 15 \times 11 &= 15 \times (10 + 1) = 15 \times 10 + 15 \times 1 = 165 \\
 26 \times 14 &= 26 \times (10 + 4) = 26 \times 10 + 26 \times 4 = 364 \\
 20 \times 19 &= 20 \times (20 - 1) = 20 \times 20 - 20 = 380 \\
 12 \times 28 &= 12 \times (30 - 2) = 12 \times 30 - 24 = 360 - 24 = 336 \\
 32 \times 12 &= 32 \times (10 + 2) = 32 \times 10 + 32 \times 2 = 320 + 64 = 384 \\
 49 \times 91 &= 49 \times (90 + 1) = 49 \times 90 + 49 = 4459 \\
 57 \times 51 &= 57 \times (50 + 1) = 57 \times 50 + 57 = 2907 \\
 26 \times 29 &= 26 \times (30 - 1) = 780 - 26 = 754
 \end{aligned}$$

Multi-Digit Multiplication

$57 \times 9 = 513$	$123 \times 13 = 1,599$
$85 \times 7 = 595$	$85 \times 16 = 1,360$
$21 \times 3 = 63$	$47 \times 24 = 1,128$
$42 \times 8 = 336$	$127 \times 13 = 1,651$
$37 \times 5 = 185$	$371 \times 11 = 4,081$
$4 \times 69 = 276$	$62 \times 15 = 930$
$46 \times 3 = 138$	$723 \times 16 = 11,568$
$21 \times 9 = 189$	$32 \times 218 = 6,976$
$71 \times 5 = 355$	$25 \times 196 = 4,900$
$6 \times 19 = 114$	$39 \times 151 = 5,889$
$76 \times 18 = 1,368$	$13 \times 420 = 5,460$
$95 \times 26 = 2,470$	$85 \times 116 = 9,860$
$79 \times 15 = 1,185$	$97 \times 104 = 10,088$

Division by 1-digit number

$$78 \div 5 = 15 \text{ R } 3$$

$$56 \div 7 = 8$$

$$99 \div 8 = 12 \text{ R } 3$$

$$72 \div 9 = 8$$

$$88 \div 3 = 29 \text{ R } 1$$

$$25 \div 2 = 12 \text{ R } 1$$

$$45 \div 4 = 11 \text{ R } 1$$

$$123 \div 4 = 30 \text{ R } 3$$

$$233 \div 6 = 38 \text{ R } 5$$

$$236 \div 7 = 33 \text{ R } 5$$

$$148 \div 5 = 29 \text{ R } 3$$

$$456 \div 6 = 76$$

$$298 \div 8 = 37 \text{ R } 2$$

$$772 \div 9 = 85 \text{ R } 7$$

Multi-Digit Division

$$632 \div 46 = 13 \text{ R } 34$$

$$456 \div 38 = 12$$

$$123 \div 11 = 11 \text{ R } 2$$

$$832 \div 29 = 28 \text{ R } 20$$

$$739 \div 21 = 35 \text{ R } 4$$

$$294 \div 18 = 16 \text{ R } 6$$

$$272 \div 16 = 17$$

$$1456 \div 25 = 58 \text{ R } 6$$

World Problem:

$36 \times 11 = 396$. So they earned 396 dollars

$63 \times 13 = 819$. The car will travel 819 miles in 13 hours

$42 \times 64 = 2,688$. They got 2,688 dollars by selling backpacks.

$85 \times 18 = 1,530$ The total weight would be 1530 pounds.

$72 \times 27 = 1,944$ There were 1,944 gears.

$56 \times 3 = 168$. There were 168 layers in total.

$198 \times 32 = 6,336$. The school spent 6,336 dollars on calculators.

$75 \times 16 = 1,200$. There are 1,200 flowers in total.

Decimals Answer:

Comparing and Order

0.0625, 0.125, 0.25, 0.5, 0.75
 15.7, 15.705, 15.72, 15.75, 15.8
 2.25, 2.5, 2.625, 2.75, 2.875
 7.223, 15, 19.05, 37.1, 73.25, 327.99

Rounding Decimals

2.17
 7
 0.025
 47.90
 1.0
 6.33
 5.9
 3.14
 0.008

Adding Decimals

$5.25 + 2.75 = 8$
 $2.85 + 6.51 = 9.36$
 $10.2 + 4.8 = 15$
 $34.2 + 9.1 = 43.3$
 $0.75 + 0.25 = 1$
 $0.98 + 0.13 = 1.11$
 $7.8 + 2.345 = 10.145$

$4.2 + 7.171 = 11.371$
 $6.123 + 0.9876 = 7.1106$
 $9.239 + 0.1454 = 9.3844$
 $9.14 + 8.14 = 17.28$
 $4.99 + 4.11 = 9.1$
 $54.9 + 7.3 = 62.2$
 $38.2 + 5.8 = 44$

Subtracting Decimals

$$16.2 - 2.55 = 13.65$$

$$5.12 - 1.69 = 3.43$$

$$19.2 - 2.7 = 16.5$$

$$163.1 - 23.9 = 139.2$$

$$0.93 - 0.18 = 0.75$$

$$189.9 - 29.3 = 160.6$$

$$62.8 - 4.18 = 58.62$$

$$91.1 - 52.31 = 38.79$$

$$96.41 - 23.236 = 73.174$$

$$23.39 - 11.44 = 11.95$$

Multiplying Decimals

$$4.5 \times 2.6 = 11.7$$

$$1.2 \times 8.4 = 10.08$$

$$0.14 \times 2.36 = 0.3304$$

$$1.84 \times 3.6 = 6.624$$

$$8.7 \times 1.39 = 12.093$$

$$81.7 \times 1.2 = 98.04$$

$$11.5 \times 1.7 = 19.55$$

$$32.5 \times 0.7 = 22.75$$

$$0.21 \times 5.21 = 1.0941$$

$$12.1 \times 4.2 = 50.82$$

$$7.24 \times 0.14 = 1.0136$$

$$49.9 \times 0.05 = 2.495$$

$$74.1 \times 1.3 = 96.33$$

$$12.2 \times 1.2 = 14.64$$

Dividing Decimals

$$72.8 \div 5 = 14.56$$

$$63.1 \div 5 = 12.62$$

$$122.9 \div 5 = 24.58$$

$$109.3 \div 2 = 54.65$$

$$88.2 \div 3 = 29.4$$

$$96.3 \div 3 = 32.1$$

$$24.4 \div 4 = 6.1$$

$$88.1 \div 5 = 17.62$$

$$23.3 \div 5 = 4.66$$

$$39.02 \div 4 = 9.755$$

$$152.8 \div 5 = 30.56$$

$$53.1 \div 3 = 17.7$$

$$312.8 \div 4 = 78.2$$

$$211.4 \div 2 = 105.7$$

Dividing Decimals

$$2.8 \div 0.5 = 5.6$$

$$3.75 \div 0.25 = 15$$

$$7.29 \div 1.5 = 4.86$$

$$8.64 \div 0.72 = 12$$

$$15.3 \div 0.6 = 25.5$$

$$66.3 \div 0.3 = 221$$

$$34.4 \div 0.4 = 86$$

$$4.03 \div 2.6 = 1.55$$

$$10.04 \div 0.2 = 50.2$$

$$19.38 \div 10 = 1.938$$

$$1.93 \div 0.5 = 3.86$$

$$8.68 \div 6.2 = 1.4$$

$$9.25 \div 2.5 = 3.7$$

$$15.08 \div 2.9 = 5.2$$

Distributive Property

$$1.5 \times 2.3 + 1.5 \times 2.7 = 1.5 \times (2.3 + 2.7) = 1.5 \times 5 = 7.5$$

$$8.23 \times 0.09 + 8.23 \times 1.91 = 8.23 \times (0.09 + 1.91) = 8.23 \times 2 = 16.46$$

$$1.14 \times 0.3 - 0.14 \times 0.3 = 0.3 \times (1.14 - 0.14) = 0.3 \times 1 = 0.3$$

$$2.4 \times 3.09 - 2.4 \times 3 = 2.4 \times (3.09 - 3) = 2.4 \times 0.09 = 0.216$$

$$3.4 \times 2.79 + 3.4 \times 1.21 = 3.4 \times (2.79 + 1.21) = 3.4 \times 4 = 13.6$$

$$5.5 \times 1.82 - 5.5 \times 0.82 = 5.5 \times (1.82 - 0.82) = 5.5 \times 1 = 5.5$$

Fraction Answer:

Simplest Form

$$\frac{6}{9} = \frac{2}{3}$$

$$\frac{12}{16} = \frac{3}{4}$$

$$\frac{12}{24} = \frac{1}{2}$$

$$\frac{24}{42} = \frac{4}{7}$$

$$\frac{49}{63} = \frac{7}{9}$$

$$\frac{27}{36} = \frac{3}{4}$$

$$\frac{3}{9} = \frac{1}{3}$$

$$\frac{48}{96} = \frac{1}{2}$$

$$\frac{25}{35} = \frac{5}{7}$$

$$\frac{28}{7} = 4$$

$$\frac{64}{72} = \frac{8}{9}$$

$$\frac{36}{60} = \frac{3}{5}$$

Adding with Like Denominator

$$\frac{5}{7}$$

$$\frac{5}{8}$$

$$1$$

$$1$$

$$\frac{5}{4}$$

$$\frac{1}{2}$$

Least Common Multiple

4 and 7 is 28

3 and 12 is 12

42 and 12 is 84

8 and 36 is 72

24 and 36 is 72

45 and 60 is 180

Adding with Unlike Denominator

$$\frac{1}{4} + \frac{1}{3} = \frac{7}{12}$$

$$\frac{3}{4} + \frac{3}{8} = \frac{9}{8}$$

$$\frac{3}{10} + \frac{11}{25} = \frac{37}{50}$$

$$\frac{5}{12} + \frac{2}{15} = \frac{11}{20}$$

$$\frac{2}{3} + \frac{4}{5} = \frac{22}{15}$$

$$\frac{16}{21} + \frac{3}{14} = \frac{41}{42}$$

$$\frac{3}{8} + \frac{7}{12} = \frac{23}{24}$$

$$\frac{1}{20} + \frac{4}{15} = \frac{19}{60}$$

$$\frac{15}{16} + \frac{7}{12} = \frac{73}{48}$$

$$\frac{3}{8} + \frac{3}{12} = \frac{5}{6}$$

Subtracting with Like Denominator

$$\frac{4}{7} - \frac{3}{7} = \frac{1}{7}$$

$$\frac{12}{13} - \frac{4}{13} = \frac{8}{13}$$

$$\frac{8}{9} - \frac{5}{9} = \frac{1}{3}$$

$$\frac{4}{5} - \frac{3}{5} = \frac{1}{5}$$

$$\frac{11}{16} - \frac{7}{16} = \frac{1}{4}$$

$$\frac{17}{18} - \frac{5}{18} = \frac{2}{3}$$

Subtracting with Unlike Denominator

$$\frac{1}{2} + \frac{3}{7} = \frac{1}{14}$$

$$\frac{9}{13} + \frac{15}{26} = \frac{3}{26}$$

$$\frac{5}{8} + \frac{13}{24} = \frac{1}{12}$$

$$\frac{7}{9} + \frac{5}{12} = \frac{13}{36}$$

$$\frac{15}{14} + \frac{12}{21} = \frac{1}{2}$$

$$\frac{8}{15} + \frac{9}{20} = \frac{1}{12}$$

$$\frac{25}{32} + \frac{7}{24} = \frac{47}{96}$$

$$\frac{7}{9} + \frac{5}{12} = \frac{13}{36}$$

$$\frac{1}{6} + \frac{1}{12} = \frac{1}{12}$$

$$\frac{9}{20} + \frac{3}{10} = \frac{3}{20}$$

Improper Fractions

$$1\frac{1}{8} = \frac{9}{8}$$

$$2\frac{6}{7} = \frac{20}{7}$$

$$5\frac{1}{2} = \frac{11}{2}$$

$$2\frac{4}{13} = \frac{30}{13}$$

$$2\frac{8}{9} = \frac{26}{9}$$

$$\frac{27}{4} = 6\frac{3}{4}$$

$$\frac{43}{9} = 4\frac{47}{96}$$

$$\frac{54}{3} = 18\frac{13}{36}$$

$$\frac{18}{7} = 2\frac{1}{12}$$

$$\frac{123}{5} = 24\frac{3}{20}$$

Adding Mixed Numbers

$$2\frac{1}{2} + 1\frac{1}{3} = 3\frac{5}{6}$$

$$2\frac{3}{4} + 6\frac{1}{5} = 8\frac{19}{20}$$

$$2\frac{1}{5} + 1\frac{2}{5} = 3\frac{3}{5}$$

$$3\frac{1}{2} + 2\frac{1}{3} = 5\frac{5}{6}$$

$$\frac{1}{4} + 2\frac{1}{3} = 3\frac{1}{12}$$

$$2\frac{3}{4} + 2\frac{3}{8} = 4\frac{23}{30}$$

$$4\frac{3}{10} + 5\frac{11}{25} = 10\frac{13}{24}$$

$$\frac{5}{12} + 3\frac{2}{15} = 8\frac{1}{12}$$

Subtracting Mixed Numbers

$$6\frac{5}{7} - 2\frac{3}{7} = 2\frac{2}{7}$$

$$5\frac{3}{4} - 2\frac{5}{8} = 3\frac{1}{8}$$

$$6\frac{8}{9} - 4\frac{7}{12} = 2\frac{11}{36}$$

$$5\frac{1}{3} - 2\frac{1}{2} = 2\frac{5}{6}$$

$$5\frac{3}{4} - 2\frac{5}{8} = 3\frac{1}{8}$$

$$14\frac{11}{12} - 2\frac{7}{15} = 2\frac{9}{20}$$

$$8\frac{3}{4} - 3\frac{1}{2} = 5\frac{1}{4}$$

$$5\frac{3}{2} - 1\frac{1}{4} = 4\frac{5}{12}$$

$$12\frac{1}{5} - 4\frac{2}{3} = 7\frac{8}{15}$$

$$15\frac{3}{8} - 7\frac{1}{2} = 7\frac{7}{8}$$

$$20\frac{1}{4} - 9\frac{3}{4} = 10\frac{1}{2}$$

$$18\frac{3}{5} - 6\frac{1}{4} = 12\frac{7}{20}$$

$$14\frac{1}{2} - 5\frac{3}{4} = 8\frac{3}{4}$$

$$17\frac{2}{3} - 9\frac{1}{5} = 8\frac{7}{15}$$

$$22\frac{3}{4} - 11\frac{1}{3} = 11\frac{5}{12}$$

$$25\frac{2}{5} - 2\frac{3}{4} = 2\frac{13}{20}$$

Exponent Answer:

Exponent

$$\begin{aligned}\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} &= \left(\frac{1}{4}\right)^4 \\ 3 \times 3 \times 3 \times 3 \times 3 &= 3^5 \\ \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} &= \left(\frac{2}{3}\right)^4 \\ 6 \times 6 \times 6 \times 6 &= 6^4 \\ \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} \times \frac{3}{11} &= \left(\frac{3}{11}\right)^4\end{aligned}$$

$$\begin{aligned}4^2 &= 4 \times 4 = 16 \\ 2^4 &= 2 \times 2 \times 2 \times 2 = 16 \\ 5^3 &= 5 \times 5 \times 5 = 125 \\ 7^2 &= 7 \times 7 = 49 \\ 9^3 &= 9 \times 9 \times 9 = 729 \\ 3^4 &= 3 \times 3 \times 3 \times 3 = 81 \\ 5^4 &= 5 \times 5 \times 5 \times 5 = 625 \\ 4^5 &= 4 \times 4 \times 4 \times 4 \times 4 = 1024\end{aligned}$$

Parentheses

$$\begin{aligned}(8+12) \times 7 &= 20 \times 7 = 140 \\ 7 \times (9+2) &= 7 \times 11 = 77 \\ 2 \times (6+5) &= 2 \times 11 = 22 \\ 21 - (7+9) &= 21 - 16 = 5 \\ 8 \div (8-4) &= 8 \div 4 = 2 \\ 36 \div (6 \times 2) &= 36 \div 12 = 3\end{aligned}$$

Operations

$$\begin{aligned}(12-8) \times 2 &= 4 \times 2 = 8 \\ 4 \times (3+2) \div 6 &= 4 \times 5 \div 6 = \frac{3}{10} \\ (44 \div 4) + (12-7) &= 11+5 = 16 \\ 9 \times 6 - (7+9) &= 54-16 = 38 \\ 21 \div (9-6) + (7-2) &= 7+5 = 12 \\ 6^2 \div (3 \times 2) &= 36 \div 6 = 6 \\ (4^3 \div 8) + (16-10) &= 8+6 = 14 \\ (7 \times 6 - 9) - (12+10) &= 33-22 = 11\end{aligned}$$

$$\begin{aligned}48 \div (18-6 \times 2) &= 48 \div 6 = 8 \\ 9^2 \div (4 \times 2 + 1) &= 81 \div 9 = 9 \\ (9 \times 2 - 9) - (8+1) &= 9-9 = 0 \\ 72 \div (16-6 \times 2) &= 72 \div 4 = 18 \\ (16+1-9) \div (2 \times 2) &= 8 \div 4 = 2 \\ (6 \times 5 - 4 \times 3) \div (7-1) &= 18 \div 6 = 3 \\ (32 \div 2 - 9) - (12-8) &= 7-4 = 3 \\ 56 \div (17-3 \times 2 - 3) &= 56 \div 8 = 7\end{aligned}$$

From Numbers

200, 300, 100n

Expressions

$$3 \times 100 + 2 \times 50 = 300 + 100 = 400 \text{ dollars}$$

$$4 \times 100 + 9 \times 50 = 400 + 450 = 850 \text{ dollars}$$

$$m \times 100 + 9 \times 50 = 450 + 100m \text{ dollars}$$

$$m \times 100 + n \times 50 = 100m + 50n \text{ dollars}$$

$$k - 3$$

$$x - 5$$

$$x + 3$$

$$\frac{12}{x}$$

$$2x - 7$$

$$9 - 4x$$

$$2 + 5x$$

$$9x + 3$$

$$9x + 8y$$

$$12x - 8y$$

From Numbers

$$15 - x = 7$$

$x = 8$. He gave 8 bags to John.

$$50 - x = 39.5$$

$x = 10.5$. He got 10.5 dollars back.

$$x = 90 / 4.5$$

$x = 20$. They worked for 20 days.

$$326 + x = 518$$

$x = 192$. The manager ordered 192 bags.

$$x + 2x = 90$$

$$x = 30.$$

$$492 - x = 118$$

$$x = 374$$

$$2x + 1.4 = 20$$

$$x = 9.3$$

$$10 - 3x = 2.5$$

$$x = 2.5$$

Geometry Answer

x,y-axis and quadrants

Quadrant 1

Quadrant 3

Quadrant 3

Quadrant 2

x-axis

y-axis

Quadrant 1

y-axis

points in coordinate plate

A(-5, 9)

B(3, 9)

C(0,6)

D(-8,0)

E(2,0)

F(-3,-5)

G(6, -4)



\$29.80

ISBN 978-1-961452-66-4

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