

NEW YORK TIMES BESTSELLER

THE BOOK THAT INSPIRED THE FILM

THE AMERICAN DREAM  
AND THE UNTOLD STORY OF  
THE BLACK WOMEN MATHEMATICIANS  
WHO HELPED WIN THE SPACE RACE

# HIDDEN FIGURES



MARGOT LEE SHETTERLY

**Book and homework  
on your desk.**

**You will have 10  
minutes to read HF.**

# Great examples:

**In this chapter we are first introduced to Dorothy Vaughan. What are three adjectives you would use to describe her? Use text to support your choices.**

Intelligent, she is a teacher and works at a high school. Hard working with this job she has to not just teach the students but keep up the building make lunches and take care of her family at home. Caring she takes a extra job with a salary of 40 cents per hour in the heat of summer to make extra money for her children and family.

**Read the back cover of the book. Based on the back cover, what is the setting of the book? Who are the main characters? What obstacles might the characters face?**

Dorothy Vaughan, Mary Jackson and Katherine Johnson are the main characters. The setting of the book is during the Cold War right after WWII. The characters will face the challenge of segregation, because of the time period of America, and Jim Crow Laws.



**10 MINUTES**

# Announcements

HF through Chapter 6 must be completed by Monday

Test Wednesday, 2/20

Return Stuff

# Unit Map

~~Thursday, 2/7/2019 → Transformations of functions~~

~~Friday, 2/8/2019 → Ms. Barger Absent, Hidden Figures reading and work~~

~~Monday, 2/11/2019 → Exponential Growth and Decay~~

~~Tuesday, 2/12/2019 → Compound Interest and Half Life~~

~~Wednesday, 2/13/2019 → Transformations of Exponentials~~

Thursday, 2/14/2019 → Scientific Notation converting back and forth

Friday, 2/15/2019 → Scientific Notation adding and subtracting & multiplying and dividing

Monday, 2/18/2019 → Scientific Notation word problems

Tuesday, 2/19/2019 → Review

Wednesday, 2/20/2019 → **Exponents Test 2**

Quizlet

[https://quizlet.com/\\_642L9y](https://quizlet.com/_642L9y)

# Discuss the Compound Interest and Half Life Homework

# Discuss the Transformation of Exponentials

## Homework



# Scientific Notation

## (Day 1 of 3)

2/14/2019



## Key Concept Scientific Notation

A number in **scientific notation** is written as the product of two factors in the form  $a \times 10^n$ , where  $n$  is an integer and  $1 \leq |a| < 10$ .

**Examples**  $8.3 \times 10^5$        $4.12 \times 10^{22}$        $7.1 \times 10^{-5}$

Is the number written in scientific notation? If not, explain.

**A**  $0.23 \times 10^{-3}$

**B**  $2.3 \times 10^7$

**C**  $9.3 \times 100^9$

**a.**  $53 \times 10^4$

**b.**  $3.42 \times 10^{-7}$

**c.**  $0.35 \times 100$

# Recognizing Scientific Notation

Is the number written in scientific notation? If not, explain.

11.  $44 \times 10^8$

12.  $3.2 \times 10^6$

13.  $0.9 \times 10^{-2}$

14.  $6.7 \times 1000^9$

15.  $7.3 \times 10^{-5}$

16.  $1.12 \times 10^1$

17.  $457 \times 10^7$

18.  $9.54 \times 10^{15}$

 **See Problem 1.**



Students, write your response!

# Recognizing Scientific Notation

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16.  $1.12 \times 10^1$

17.  $457 \times 10^7$

18.  $9.54 \times 10^{15}$

11. No; 44 is not less than 10.

12. yes

13. No; 0.9 is not greater than 1.

14. No;  $1000^9$  is not written as a power of 10.

15. yes

16. yes

17. No; 457 is not less than 10.

18. yes

19.  $9.04 \times 10^9$

With scientific notation use non-negative exponents to write numbers greater than 1.

$$1,430,000,000 = 1.43 \times 1,000,000,000 = 1.43 \times 10^9$$

Use negative exponents to write numbers between 0 and 1.

$$.0000000025 = 2.5 \times 10^{-9}$$

# Writing a Number in Scientific Notation

**Physical Science** What is each number written in scientific notation?

approximate distance between the sun and Saturn: 1,430,000,000 km

$$1,430,000,000 = 1.43 \times 10^9$$

Move the decimal point  
9 places to the left.

Use 9 as the  
exponent.

Remove the zeros  
after the 3.

the radius of an atom: 0.0000000001 m

$$0.0000000001 = 1 \times 10^{-10}$$

Move the decimal point 10 places to the right and use  $-10$  as the exponent. Remove the zeros before the 1.

What is each number written in scientific notation?

**a.** 678,000

**b.** 0.000032

**c.** 51,400,000

**d.** 0.0000007



Write each number in scientific notation.

 **See Problem 2.**

19. 9,040,000,000

20. 0.02

21. 9.3 million

22. 21,700

23. 0.00325

24. 8,003,000

25. 0.00092

26. 0.0156



Students, write your response!

# Complete problems 19 - 26 on pg 424

Write each number in scientific notation.

 See Problem 2.

19. 9,040,000,000

20. 0.02

21. 9.3 million

22. 21,700

23. 0.00325

24. 8,003,000

25. 0.00092

26. 0.0156

**18.** yes

**19.**  $9.04 \times 10^9$

**20.**  $2 \times 10^{-2}$

**21.**  $9.3 \times 10^6$

**22.**  $2.17 \times 10^4$

**23.**  $3.25 \times 10^{-3}$

**24.**  $8.003 \times 10^6$

**25.**  $9.2 \times 10^{-4}$

**26.**  $1.56 \times 10^{-2}$

**27.** 500

# Writing a number in Standard Notation

**Biology** What is each number written in standard notation?

weight of an Asian elephant:  $5.5 \times 10^6$  g

$$\begin{aligned} 5.5 \times 10^6 &= 5,500,000 && \text{Move the decimal point 6 places to the right.} \\ &= 5,500,000 \end{aligned}$$

weight of an ant:  $3.1 \times 10^{-3}$  g

$$\begin{aligned} 3.1 \times 10^{-3} &= 0.0031 && \text{Move the decimal point 3 places to the left.} \\ &= 0.0031 \end{aligned}$$

What is each number in parts (a)-(d) written in standard notation?

**a.**  $5.23 \times 10^7$

**b.**  $4.6 \times 10^{-5}$

**c.**  $2.09 \times 10^{-4}$

**d.**  $3.8 \times 10^{12}$



Students, write your response!

What is each number in parts (a)–(d) written in standard notation?

- a.**  $5.23 \times 10^7$       **b.**  $4.6 \times 10^{-5}$       **c.**  $2.09 \times 10^{-4}$       **d.**  $3.8 \times 10^{12}$

## Answers

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**Got It?** (continued)

**3. a.** 52,300,000

**b.** 0.000046

**c.** 0.000209

**d.** 3,800,000,000,000

**e.** *a*

**4.** electron, proton, neutron

 **See Problem 3.**

**Write each number in standard notation.**

**27.**  $5 \times 10^2$

**28.**  $7.45 \times 10^2$

**29.**  $2.04 \times 10^3$

**30.**  $7.2 \times 10^6$

**31.**  $8.97 \times 10^{-1}$

**32.**  $1.3 \times 10^0$

**33.**  $2.74 \times 10^5$

**34.**  $4.8 \times 10^{-3}$



Students, write your response!

# Complete 27 - 34 on page 424

Write each number in standard notation.

27.  $5 \times 10^2$

28.  $7.45 \times 10^2$

29.  $2.04 \times 10^3$

30.  $7.2 \times 10^6$

31.  $8.97 \times 10^{-1}$

32.  $1.3 \times 10^0$

33.  $2.74 \times 10^5$

34.  $4.8 \times 10^{-3}$

 See Problem 3.

26.  $1.56 \times 10^{-2}$       27. 500

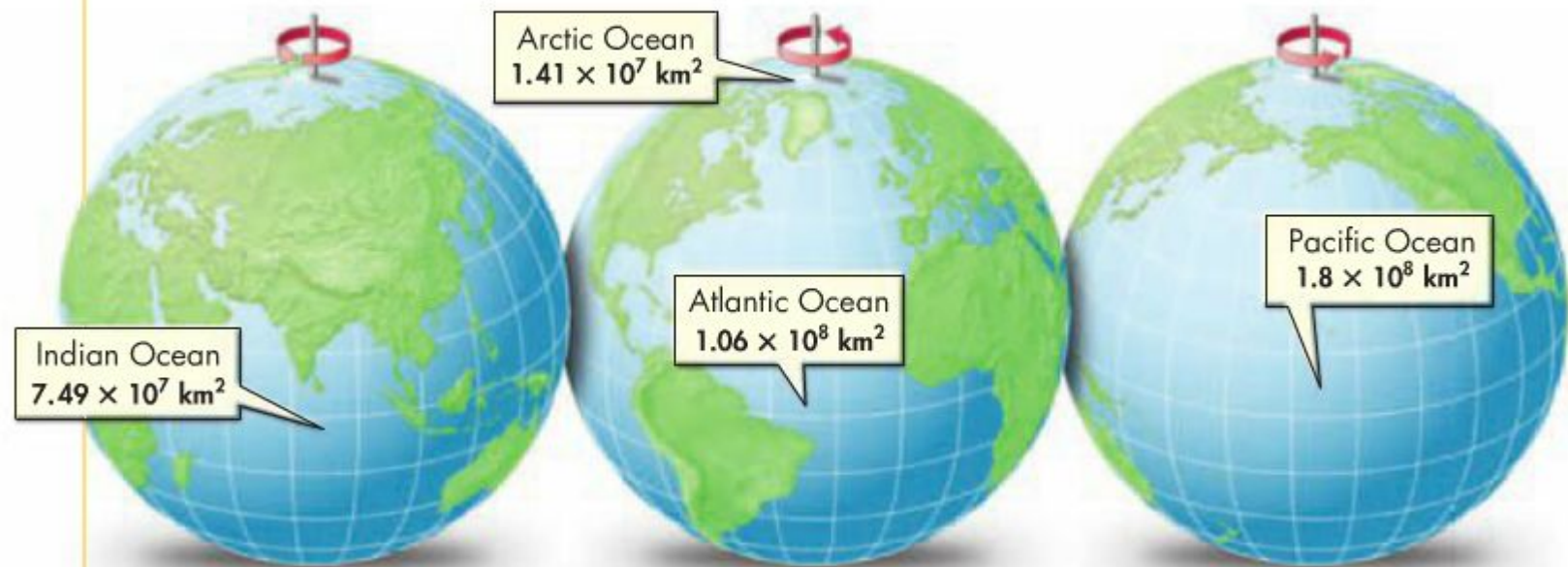
28. 745      29. 2040

30. 7,200,000      31. 0.897

32. 1.3      33. 274,000

34. 0.0048

**Geography** The map below shows four major world oceans and their surface areas. What is the order of the oceans from least to greatest surface area?



Students, write your response!



**Geography** The map below shows four major world oceans and their surface areas. What is the order of the oceans from least to greatest surface area?



**Why do you arrange the numbers by the powers of 10 first?**

If two numbers written in scientific notation have different powers of 10, then the number with the greater power of 10 is greater.

Order the numbers by the powers of 10. Arrange the numbers with the same power of 10 in order by their decimal parts.

$$1.41 \times 10^7$$

Arctic

$$7.49 \times 10^7$$

Indian

$$1.06 \times 10^8$$

Atlantic

$$1.8 \times 10^8$$

Pacific

From least to greatest surface area, the order of the oceans is the Arctic, the Indian, the Atlantic, and the Pacific.

k. What is the order of the following parts of an atom from least to greatest mass?

neutron:  $1.675 \times 10^{-24}$  g, electron:  $9.109 \times 10^{-28}$  g,

proton:  $1.673 \times 10^{-24}$  g



Students, write your response!

k. What is the order of the following parts of an atom from least to greatest mass?

neutron:  $1.675 \times 10^{-24}$  g, electron:  $9.109 \times 10^{-28}$  g,

proton:  $1.673 \times 10^{-24}$  g

**4.** electron, proton, neutron

# Ordering Numbers with Scientific Notation

What is the order of  $49.7 \times 10$ ,  $4.17 \times 10^7$ ,  $0.047 \times 10^9$ , and 495 from least to greatest?

**Step 1** Write each number in scientific notation.

$49.7 \times 10$	$4.17 \times 10^7$	$0.047 \times 10^9$	495
↓	↓	↓	↓
$4.97 \times 10^2$	$4.17 \times 10^7$	$4.7 \times 10^7$	$4.95 \times 10^2$

**Step 2** Order the numbers by the powers of 10. Arrange the numbers with the same power of 10 in order by their decimal parts.

$4.95 \times 10^2$	$4.97 \times 10^2$	$4.17 \times 10^7$	$4.7 \times 10^7$
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**Step 3** Write the original numbers in order.

495	$49.7 \times 10$	$4.17 \times 10^7$	$0.047 \times 10^9$
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Order the numbers in each list from least to greatest.

35.  $9 \times 10^{-7}$ ,  $8 \times 10^{-8}$ ,  $7 \times 10^{-6}$ ,  $6 \times 10^{-10}$

36.  $8.2 \times 10^5$ ,  $7.9 \times 10^5$ ,  $2.7 \times 10^5$ ,  $8.1 \times 10^5$

37.  $50.1 \times 10^{-3}$ ,  $4.8 \times 10^{-3}$ ,  $0.52 \times 10^{-3}$ ,  $56 \times 10^{-3}$

38.  $0.53 \times 10^7$ ,  $5300 \times 10^{-1}$ ,  $5.3 \times 10^5$ ,  $530 \times 10^8$

 See Problems 4 and 5.



Students, write your response!

# Complete problems 35 - 39 on page 424 with a partner

Order the numbers in each list from least to greatest.

**35.**  $9 \times 10^{-7}$ ,  $8 \times 10^{-8}$ ,  $7 \times 10^{-6}$ ,  $6 \times 10^{-10}$

**36.**  $8.2 \times 10^5$ ,  $7.9 \times 10^5$ ,  $2.7 \times 10^5$ ,  $8.1 \times 10^5$

**37.**  $50.1 \times 10^{-3}$ ,  $4.8 \times 10^{-3}$ ,  $0.52 \times 10^{-3}$ ,  $56 \times 10^{-3}$



**38.**  $0.53 \times 10^7$ ,  $5300 \times 10^{-1}$ ,  $5.3 \times 10^5$ ,  $530 \times 10^8$

**35.**  $6 \times 10^{-10}$ ,  $8 \times 10^{-8}$ ,  $9 \times 10^{-7}$ ,  
 $7 \times 10^{-6}$

**36.**  $2.7 \times 10^5$ ,  $7.9 \times 10^5$ ,  $8.1 \times 10^5$ ,  
 $8.2 \times 10^5$

**37.**  $0.52 \times 10^{-3}$ ,  $4.8 \times 10^{-3}$ ,  
 $50.1 \times 10^{-3}$ ,  $56 \times 10^{-3}$

**38.**  $5300 \times 10^{-1}$ ,  $5.3 \times 10^5$ ,  
 $0.53 \times 10^7$ ,  $530 \times 10^8$

You can use a scientific calculator to work with numbers in scientific notation. The E on a calculator readout stands for exponentiation. The readout 1.35E8 means  $1.35 \times 10^8$ , or 135,000,000. The  key lets you input an exponent for a power of 10. So to enter  $4 \times 10^6$ , you can enter 4  6.

Homework

Page 424 # 39-47