Pg. 222-223 #2-4, 9-29 odd, 36, 41-45

2. 0.01, because it is equal to 1%, and the others are equal to 10%.

3. *Sample answer:* $\frac{3}{20}, \frac{23}{100}, \frac{1}{8}$

4. yes; You can rewrite $1\frac{1}{4}$ as the improper fraction $\frac{125}{100}$, which is equal to 125%.

9. $\frac{9}{10}$

11. $\frac{7}{100}$

13. $\frac{79}{100}$

15. $1\frac{22}{25}$

17. $2\frac{6}{25}$

19. $\frac{1}{250}$

21. 10%

23. 55%

25. 54%

27. 185%

29. The decimal point should not have been added to the percent expression.

$$\frac{14}{25} = \frac{14 \times 4}{25 \times 4} = \frac{56}{100} = 56\%$$

36. **a.** $\frac{7}{16}$

b. 27.5%

41. $\frac{1}{2}$

42. 12

43. 16

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

45. D

Pg. 660-661, #1, 3 – 19, odd, 22, 25, 31

1.

$\frac{18}{25}$	0.72	72%
$\frac{17}{20}$	0.85	85%
$\frac{13}{50}$	0.26	26%
$\frac{31}{50}$	0.62	62%
$\frac{9}{20}$	0.45	45%

3. 0.04; $0.04 = 4\%$, but 40%, $\frac{2}{5}$, and 0.4 are all equal to 40%.

4. 95%

5. 20%

6. $\frac{37}{50}$

7. $\frac{13}{25}$

8. 86%

9. 76%

10. $\frac{5}{8}$

11. 0.12

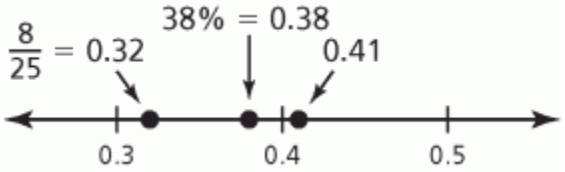
12. 17%

13. 140%

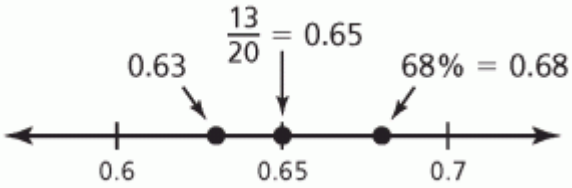
14. $\frac{1}{3}$

15. 80%

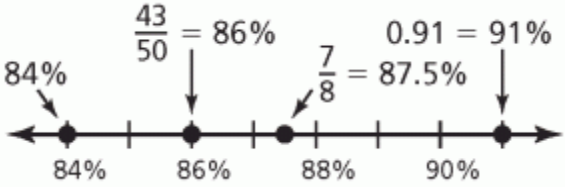
16.



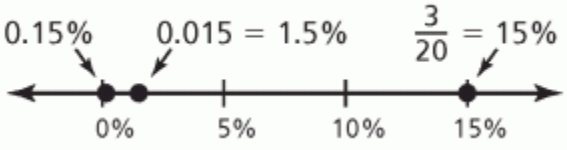
17.



18.



19.



22. yes

25. $21\%, 0.2\overline{1}, \frac{11}{50}, \frac{2}{9}$

31. See *Taking Math Deeper*.

Pg. 229 #3, 4, 9, 13, 19, 27-33 odd AND
Pg. 666 #11-17 odd, 20-26 all

3. 12

4. 4

9. 12.5

13. 20.25

19. 84

27. 140

29. 84

31. 80

33. 25

11. $\frac{12}{25} = \frac{p}{100}; p = 48$

13. $\frac{9}{w} = \frac{25}{100}; w = 36$

15. $\frac{a}{124} = \frac{75}{100}; a = 93$

17. $\frac{a}{40} = \frac{0.4}{100}; a = 0.16$

20. 21 students

21. $6000

22. $\frac{0.5}{20} = \frac{p}{100}; p = 2.5$

23. $\frac{14.2}{w} = \frac{35.5}{100}; w = 40$

24. $\dfrac{\frac{3}{4}}{w} = \dfrac{60}{100}; w = 1\dfrac{1}{4}$

25. $\dfrac{a}{\frac{7}{8}} = \dfrac{25}{100}; a = \dfrac{7}{32}$

26. 4 left

Name Answers Date _____

UNIT 5 Percents QUIZ Review- 15.1, 5.5, 5.6, & 15.3-15.4

Section 5.5 & 15.1- Percents & Decimals

Write the percent as a fraction or mixed number in simplest form.

1. 32% $\frac{8}{25}$ **2.** 9% $\frac{9}{100}$ **3.** 250% $2\frac{1}{2}$ **4.** 120% $1\frac{1}{5}$

5. Describe and correct the error in writing 8% as a fraction.

$\times \quad 8\% = \frac{8}{10} = \frac{4}{5}$

It should be out of 100.
It should have been $\frac{8}{100}$ which simplifies to $\frac{2}{25}$

Write the fraction or mixed number as a percent.

6. $\frac{9}{50}$ 18% **7.** $\frac{12}{25}$ 48% **8.** $1\frac{3}{5}$ 160% **9.** $2\frac{4}{25}$ 216%

Write the decimal as a percent.

10. 0.04 4% **11.** 0.312 31.2% **12.** 0.5 50% **13.** 1.08 108% **14.** 0.0245 2.45%

15. On a history test, you get 86 out of a possible 100 points. Write a decimal and a percent that represent a score of 86 out of 100.

0.86 and 86%

16. Of the fluids that you drink on a typical day, $\frac{1}{10}$ is milk and 50% is water. How many times more water do you drink than milk?

$\frac{1}{10} = 10\%$

5 times more water than milk.

Section 15.2- Comparing & Ordering Fractions, Decimals and Percents

Tell which number is greater.

17. 0.482, 49% — 49%

18. 16%, 0.108 — 16%

19. $\frac{12}{25}$, 48% — Equal

20. 5020%, $50\frac{1}{4}$ — $50\frac{1}{4}$

21. 1.2, 11% — 1.2

22. 58%, $\frac{31}{50}$ — $\frac{31}{50}$

23. 12.25%, $\frac{1}{8}$ — $\frac{1}{8}$

24. Describe and correct the error in comparing 0.7% and $\frac{17}{25}$

$\times$ $\frac{17}{25} \overset{\times 4}{=} \frac{68}{100} = 0.68\%$ (×4 above, ×4 below)

0.7% is greater than 0.68%, so 0.7% is the greater number.

there shouldn't be a decimal point in the percent form. it should have been 68%.

Use a number line to order the numbers from least to greatest.

25. $3\frac{2}{3}$, 362%, 3.66, $3\frac{3}{5}$, 36 — $3\frac{3}{5}$, 362%, 3.66, $3\frac{2}{3}$, 36

26. 0.3, 27.3%, $\frac{11}{40}$, 28%, 0.27 — 0.27, 27.3%, $\frac{11}{40}$, 28%, 0.3

27. You use 8 fluid ounces of fruit juice in a recipe to make 64 fluid ounces of fruit punch. A fruit punch you can buy at the store has 10% real fruit juice. Which has a higher percent of fruit juice?

The one you make. $\frac{8}{64} = \frac{1}{8} = 0.125$ which is 12.5% real juice

Section 5.6- Solving Percent Problems

Find the percent of the number.

28. 52% of 44 — 22.88

29. 3% of 58 — 1.74

30. 110% of 40 — 44

31. Describe and correct the error in finding 4% of 65.

4% is 0.04 not 0.4

$\times$ 4% of 65 = 0.4 × 65 = 26

0.04 × 65 = 2.6

Find the whole. Explain your method.

32. 75% of what number is 24?

32

33. 65% of what number is 39?

60

34. Yesterday, 5% of the 120 sixth graders at a school were late. How many sixth graders were late?

6 sixth graders

35. The sale price of a pair of pants is 65% of the regular price of $25. How much do you save by buying the pants on sale?

$16.25 on sale. You save 25 − 16.25 = $8.75

Section 15.3- The Percent Proportion

Write and solve a proportion to answer the question.

36. 40% of what number is 15?

$\frac{15}{w} = \frac{40}{100}$

$w = 37.5$

37. 24 is 0.6% of what number?

$\frac{24}{w} = \frac{0.6}{100}$

$w = 4000$

38. 17 is what percent of 68?

$\frac{17}{68} = \frac{p}{100}$ $p = 25\%$

39. Of the 60 seeds that you plant, 80% germinate. How many seeds germinate?

48 seeds

40. You are making 28 name badges for a committee. You complete 75% of these on Monday. How many do you have left to complete on Tuesday?

21 badges

Section 15.4- The Percent Equation

Write and solve an equation to answer the question.

41. What number is 70% of 120?

$a = 0.7 \times 120$

$a = 84$

42. 112 is 56% of what number?

$112 = 0.56 \times w$

$w = 200$

43. 128 is what percent of 80?

$128 = p \times 80$

$p = 160\%$

44. Your class is going on a field trip. Twenty-four students have turned in their permission slips so far. This is 80% of the students in the class. How many students are in the class?

$24 = 0.8 \times w$ $w = 30$

45. You take a test with 32 questions on it. You answer 24 questions correctly. What percent of the questions do you answer correctly?

$24 = p \times 32$ 75%

Pg. 672-673 #10-17 all, 20, 22, 28, 35

10. $a = 0.2 \cdot 150$; 30

11. $45 = p \cdot 60$; 75%

12. $35 = 0.35 \cdot w$; 100

13. $a = 0.008 \cdot 150$; 1.2

14. $29 = p \cdot 20$; 145%

15. $12 = 0.005 \cdot w$; 2400

16. $51 = p \cdot 300$; 17%

17. $102 = 1.2 \cdot w$; 85

20. \$200

22. 5%

28. **a.** 80 students

b. 30 students

35. 0.36

Pg. 680-681 #1, 9-15 odd, 16-19, 24, 34

1. If the original amount decreases, the percent of change is a percent of decrease. If the original amount increases, the percent of change is a percent of increase.

9. decrease; 66.7%

11. increase; 225%

13. decrease; 12.5%

15. decrease; 37.5%

16. The denominator should be 18, which is the original amount.

$$\frac{26 - 18}{18} \approx 0.44 = 44\%$$

17. 12.5% decrease

18. 25%

19. **a.** about 16.7%

b. 280 people; To get the same percent error, the amount of error needs to be the same. Because your estimate was 40 people below the actual attendance, an estimate of 40 people above the actual attendance will give the same percent error.

24. Increasing 20 to 40 is the same as increasing 20 by 20. So, it is a 100% increase. Decreasing 40 to 20 is the same as decreasing 40 by one-half of 40. So, it is a 50% decrease.

34. $5 = 0.05 \cdot w; 100$

Pg. 686-687 #5-21 odd, 22

5. $35.70

7. $76.16

9. $53.33

11. $450

13. $172.40

15. 20%

17. $55

19. $175

21. "Multiply $45.85 by 0.1" and "Multiply $45.85 by 0.9, then subtract from $45.85." Both will give the sale price of $4.59. The first method is easier because it is only one step.

22. **a.** Store C

b. at least 11.82%

Pg. 692-693 Pg. #1, 5, 7, 9, 13-27 odd, 32

1. I = simple interest,
P = principal,
r = annual interest rate (in decimal form),
t = time (in years)

5. **a.** \$300 **b.** \$1800

7. **a.** \$292.50 **b.** \$2092.50

9. **a.** \$308.20 **b.** \$1983.20

13. 3%

15. 4%

17. 2 yr

19. 1.5 yr

21. \$1440

23. 2 yr

25. \$2720

27. \$6700.80

32. See *Taking Math Deeper.*

Name Answers Date

15.7 – Simple Interest

Example

You borrow money $500 a period of 2.5 years at a rate of 15% each year?

How much interest will you pay in the 2.5 year period?

$I = P \cdot r \cdot t$
$= 500 \times .15 \times 2.5$
$= \$187.50$

How much do you have to totally pay back?

$500 + 187.50 = \$687.50$

Complete the following:

1)

Principal	Rate	Time	Interest
$450	8%	36 months	$108

$I = P \cdot r \cdot t$
$= 450 \times .08 \times 3$
$= \$108$

2)

Principal	Rate	Time	Interest
$900	20%	3 months	$45

$I = P \cdot r \cdot t$
$= 900 \times .2 \times .25$
$= \$45$

3)

Principal	Rate	Time	Interest
$700	10%	18 months	$105

$I = P \cdot r \cdot t$
$= 700 \times .1 \times 1.5$
$= \$105$

4)

Principal	Rate	Time	Interest	Total (Balance)
$1500	10%	6 months	$75	$1575

$I = P \cdot r \cdot t$
$= 1500 \times .1 \times .5$
$= \$75$

5)

Principal	Rate	Time	Interest	Total (Balance)
$3500	8%	3 months	$70	$3570

$I = P \cdot r \cdot t$

$= 3500 \times .08 \times .25$

$= \$70$

6)

Principal	Rate	Time	Interest
$150	2%	6 years	$18

$I = P \cdot r \cdot t$

$18 = 150 \times r \times 6$

$\frac{18}{900} = \frac{900 \times r}{900}$

$.02 = r$

$2\% = r$

7)

Principal	Rate	Time	Interest
$940	7 %	2.5 years	$164.50

$I = P \cdot r \cdot t$

$164.50 = 940 \times r \times 2.5$

$\frac{164.50}{2350} = \frac{2350 \times r}{2350}$

$.07 = r$

$7\% = r$

8)

Principal	Rate	Time	Interest
$600	4%	3 years	$72

$I = P \cdot r \cdot t$

$72 = 600 \times .04 \times t$

$\frac{72}{24} = \frac{24 \times t}{24}$

$3 \text{ years} = t$

9)

Principal	Rate	Time	Interest
$1450	8%	1.5 years or 18 months	$174

$I = P \cdot r \cdot t$

$174 = 1450 \times .08 \times t$

$\frac{174}{116} = \frac{116t}{116}$

$1.5 \text{ years} = t$

10) Ms. Dutta borrowed $800 for a period of 2 years. ~~He~~ She is to pay interest at a rate of 9% a year. How much interest will she have to pay?

$I = P \cdot r \cdot t$

$I = 800 \times .09 \times 2$

$I = \$144$

11) Ms. Yob found out that she has to pay $500 in interest on her loan. She totally forgot how much she borrowed. However, she does know that the interest rate was 5% for 5 years. Please help Ms. Yob find out how much her loan was.

$I = P \cdot r \cdot t$

$500 = P \times .05 \times 5$

$\frac{500}{.25} = \frac{.25 \times P}{.25}$

$\$2000 = P$

Name Answers _____ Date _____

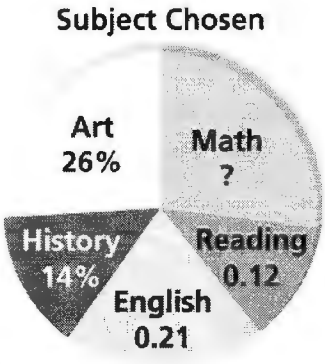
UNIT 5 Study Guide (15.1-15.7 & 5.6)

Section 5.5 & 15.1- Percents & Decimals

1. About 36% of the students at a middle school are seventh graders. What percent are *not* in seventh grade?

100 − 36 = 64% not in 7th grade

2. Students in an after-school enrichment program chose one of five subject areas.



a. What percent chose English or reading?

0.21 + 0.12 = 0.33 = 33%

b. What percent chose English or history?

14% + 21% = 35%

c. How many times more students chose English than reading?

$\frac{0.21}{0.12}$ = 1.75 times more

d. What percent chose math? Write the percent as a decimal.

100 − (26 + 14 + 21 + 12)

= 10 − 73 = 27% = 0.27

Section 15.2- Comparing & Ordering Fractions, Decimals, & Percents

Tell which number is greater.

3. $\frac{1}{4}$, 22%

25%

$\frac{1}{4}$

4. $\frac{5}{9}$, 55%

55.5%

$\frac{5}{9}$

5. 3.2, 32%

320%

3.2

6. 99.9%, 1

1

Use a number line to order the numbers from least to greatest.

7. $\frac{1}{3}$, 0.3, 33%, $\frac{8}{25}$, 33.6%

.3̄ .3 .33 .32 .336

0.3, $\frac{8}{25}$, 33%, $\frac{1}{3}$, .336

8. 210%, 2.2, 2.2̄, $\frac{43}{20}$

2.1 2.2 2.2̄ 2.15

210%, $\frac{43}{20}$, 2.2, 2.2̄

Tell which letter shows the graph of the number.

9. 0.884

88.4% B

10. $\frac{8}{9}$

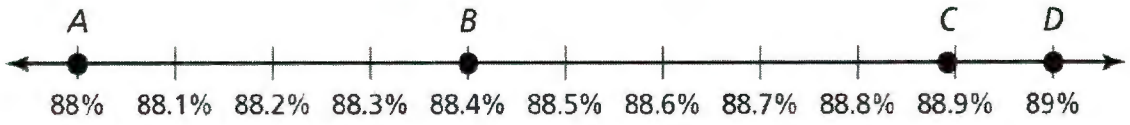
88.8̄% C

11. $\frac{22}{25}$

88% A

12. 0.89

89% D



Section 5.6- Solving Percent Problems

Copy and complete the statement using <, >, or =.

13. 55% of 60 ___?___ 60% of 65

= 33 [<] = 39

14. 110% of 3 ___?___ 0.9% of 300

= 3.3 [>] = 2.7

15. How many hours is 75% of 3 days?

.75 × 3 = 2.25

2.25 × 24 hours = 54 hours

16. How many feet is 20% of 4 miles?

0.2 × 4 = 0.8

0.8 × 5280 ft = 4224 ft

17. A restaurant serves you a 16-fluid ounce glass of juice that is 30% ice. How many fluid ounces of juice do you actually get?

If 30% ice, then there is 70% juice...

.7 × 16 = 11.2 ounces of juice

18. A monitor that regularly costs $100 is on sale for 15% off. The salesperson offers you 20% off the sale price. What is the salesperson's price?

$100 \times .15 = 15$

$100 - 15 = \$85$ sale price

$85 \times .2 = 17$

$85 - 17 = \$68$ for the salesperson's price

Section 15.3- The Percent Proportion

Write and solve a proportion to answer the question.

19. 55% of what number is 33?

$\frac{33}{w} = \frac{55}{100}$

$w = 60$

20. What percent of 120 is 42?

$\frac{42}{120} = \frac{p}{100}$

$p = 35\%$

21. $\frac{7}{8}$ is 70% of what number?

.875

$\frac{.875}{w} = \frac{70}{100}$

$w = 1.25$ or $1\frac{1}{4}$

22. 7.2 is 250% of what number?

$\frac{7.2}{w} = \frac{250}{100}$

$w = 2.88$

23. You pay $3.69 for a gallon of gasoline. This is 90% of the price of a gallon of gasoline one year ago. What was the price of a gallon of gasoline one year ago?

$\frac{3.69}{w} = \frac{90}{100}$

$w = \$4.10$

24. Describe and correct the error in using the percent proportion to answer the question below.

"6 is 6.25% of what number?"

In the percent proportion, you don't need to convert the percent to a decimal.

$\frac{6}{w} = \frac{6.25}{100}$

$w = 96$

$$\frac{a}{w} = \frac{p}{100}$$

$$\frac{6}{w} = \frac{0.0625}{100}$$

$$w = 9600$$

Section 15.4- The Percent Equation

Write and solve an equation to answer the question.

25. 27 is 0.5% of what number?

$27 = .005 \times w$

$5400 = w$

26. What number is 125% of 240?

$a = 1.25 \times 240$

$a = 300$

27. 1.4% of what number is 28?

$28 = .014 \times w$

$2000 = w$

28. 27 is what percent of 72?

$27 = p \times 72$

$.375 = p$

$37.5\% = p$

29. During a given month, there was a total of 23.6 inches of rain. This was 250% of the average rainfall for that month. What is the average rainfall for that month?

$23.6 = 2.5 \times w$

$9.4 \text{ inches} = w$

30. To maintain an acceptable level of chlorine in your pool, you add 1.4 gallons of chlorine. This is 0.007% of the amount of water in your pool. How many gallons of water are in your pool?

$1.4 = 0.00007 \times w$

$20{,}000 \text{ gallons} = w$

Section 15.5- Percents of Increase and Decrease

Find the new amount.

31. 100 textbooks increased by 99%

$100 \times .99 = 99$

$100 + 99 = 199$ books

32. 140 fluid ounces increased by 45%

$140 \times .45 = 63$

$140 + 63 = 203$ fl oz.

Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round to the nearest tenth of a percent, if necessary.

33. 14 dollars to 10 dollars

Decrease

$\frac{4}{14} = \frac{p}{100}$

$p = 28.5714\ldots$

$p \approx 28.6\%$

34. 150 pounds to 135 pounds

Decrease

$\frac{15}{150} = \frac{p}{100}$

$p = 10\%$

35. Yesterday 270 concert tickets were sold. Today 216 tickets were sold.

a. Find the percent of change in the number of tickets sold from yesterday to today.

$270 - 216 = 54$

$\frac{54}{270} = \frac{p}{100}$

$p = 20\%$ decrease

b. Use the percent of change from part (a) to predict the number of tickets sold tomorrow. Round to the nearest ticket, if necessary.

$\frac{a}{216} = \frac{20}{100}$

$a = 43.2 \approx 43$

$216 - 43 = 173$ tickets

c. Find the predicted percent of change in the number of tickets sold from yesterday to tomorrow. Round to the nearest tenth of a percent, if necessary.

Amount change $= 270 - 173 = 97$

$\frac{97}{270} = \frac{p}{100}$

$p = 35.925\ldots$

$p \approx 35.9\%$

Section 15.6- Discount & Mark-Up

Find the cost to store or selling price.

36. Cost to store: $65

Markup: 25%

Selling price: ?

$65 \times .25 = 16.25$

$65 + 16.25 = \boxed{\$81.25}$

37. Cost to store: ?

Markup: 80%

Selling price: $122.40

original	80%
w	122.40

100% 180%

$a = p \cdot w$

$122.40 = 1.8w$

$\boxed{\$68 = w}$

38. The cost to a store for a box of cereal is $2.50. The store is selling the box of cereal for $3.50. What is the percent of markup?

$3.50 - 2.50 = 1$ $\quad 1 = p \times 2.50$

$0.4 = p$

$\boxed{40\% = p}$

39. A store pays $120 for a bicycle.

a. The store has a 60% markup policy. What is the selling price of the bicycle?

$a = .6 \times 120$

$a = \$72$

$120 + 72 = \boxed{\$192}$

b. The store is now going out of business and is selling all of the bicycles at a 30% discount. What is the sale price of the bicycle?

$a = .3 \times 192$

$a = \$57.60$

$192 - 57.60 = \boxed{\$134.40}$

c. Will the store make money or lose money on the bicycle? How much?

They will still make money

$134.40 - 120 = 14.40$

They will still make $14.40 for each bike

Section 15.7- Simple Interest

An account earns simple interest. (a) Find the interest earned. (b) Find the balance of the account.

40. $200 at 3% for 5 years

a) $I = Prt$

$I = 200 \times .03 \times 5$

$I = \$30$

b) $200 + 30 = \$230$ balance

41. $750 at 8% for 2 years

a) $I = Prt$

$I = 750 \times .08 \times 2$

$I = \$120$

b) $750 + 120 = \$870$ balance

42. $1600 at 5% for 1 year

a) $I = Prt$

$I = 1600 \times .05 \times 1$

$I = \$80$

b) $1600 + 80 = \$1680$ balance

43. $500 at 12% for 6 months

a) $I = Prt$

$I = 500 \times .12 \times .5$

$I = \$30$

b) $500 + 30 = \$530$ balance

Find the annual interest rate.

44. $I = \$18$, $P = \$150$, $t = 6$ years

$I = Prt$

$18 = 150 \times r \times 6$

$\frac{18}{900} = \frac{900 \times r}{900}$

$.02 = r$

$2\% = r$

Find the amount of time.

45. $I = \$72$, $P = \$600$, $r = 4\%$

$I = Prt$

$72 = 600 \times .04 \times t$

$\frac{72}{24} = \frac{24 \times t}{24}$

3 years $= t$

46. You deposit $350 in a savings account. The account earns 2.5% simple interest per year. What is the balance after 2 years?

$I = P \cdot r \cdot t$

$I = 350 \times .025 \times 2$

$I = \$17.50$

$350 + 17.50 = \boxed{\$367.50}$

47. You deposit $2000 in a savings account earning 5% simple interest. How long will it take for the balance of the account to be $3800?

$3800 - 2000 = 1800$

$I = P \cdot r \cdot t$

$1800 = 2000 \times .05 \times t$

$\frac{1800}{100} = \frac{100 \times t}{100}$

$\boxed{18 \text{ years} = t}$