

Mental Percents



Name: _____

Class: _____

Exercise 1: Mental Percents Based on 50%

Answers only are required. **NO CALCULATORS!**

To find 50% of a number:	$\div 2$
To find 25% of a number:	$\div 2$, then $\div 2$ OR $\div 4$
To find $12\frac{1}{2}\%$ of a number: and so on...	$\div 2$, then $\div 2$, then $\div 2$ OR $\div 8$

- Find 50% of
 - \$20
 - 6 books
 - 24 leopards
 - 800 kangaroos
 - \$7 000
 - 72 DVDs
 - 17 metres
 - \$23.40
- Find 25% of
 - \$32
 - 12 rabbits
 - 60 dogs
 - 48 blubbers
 - \$18 000
 - 22 000 hectares
 - 45 nuggets
 - 420 000 pencils
- Find $12\frac{1}{2}\%$ of
 - \$80
 - 32 grams
 - 96 ferrets
 - \$4.00
 - 6 m^2
 - 20 mm
 - 0.4 kilograms
 - \$30.00
- Find 75% of
 - \$24
 - 40 km^2
 - 600 socks
 - 280 batteries
 - \$22
 - 18 hectares
 - \$5000
 - 220 lions
- K-Mart is having a 25% off sale. How much will you *save* if you buy:
 - a pen that normally costs \$10?
 - a shirt that normally costs \$50?
- K-Mart is having a 25% off sale. How much will you *pay* if you buy:
 - a pen that normally costs \$16?
 - a wallet that normally costs \$60?
- K-Mart is having a $\frac{1}{4}$ off sale. How much will you *save* if you buy:
 - a skirt that normally costs \$72?
 - a bike that normally costs \$420?
- K-Mart is having a $\frac{1}{4}$ off sale. How much will you *pay* if you buy:
 - a skirt that normally costs \$80?
 - a bike that normally costs \$440?
- The population of Yeppoon has increased by 25% since 1999. The population in 1999 was 12 000 people. What is the population now?
- The population of Dusty Creek has decreased by $12\frac{1}{2}\%$ since 1999. The population in 1999 was 120 people. What is the population now?

Mega Challenge!

- The population of Smithville was 1800 in 2001. In 2002 the population increased by 25%. In 2003 the population decreased by 25%. What was the population at the end of 2003?
- Find $12\frac{1}{2}\%$ of 25% of 50% of 1600 people.

Exercise 2: Mental Percents based on 10%

Answers only are required. **NO CALCULATOR!**

To find 10% of a number:	$\div 10$
To find 20% of a number:	$\div 10$, then $\times 2$ OR $\div 5$
...	
To find 5% of a number:	$\div 10$, then $\div 2$

- Find 10% of
 - \$20
 - 500 calculators
 - 60 blankets
 - 60 000 airplanes
 - \$9000
 - 620 hamsters
 - 240 goats
 - \$1 million
- Find 20% of
 - \$50
 - 30 spoons
 - 400 camels
 - 90 tapes
 - \$15 000
 - 60 000 hectares
 - 900 nuggets
 - 300 000 bracelets
- Find 10% of
 - \$3.60
 - 45 cm
 - 625 metres
 - 32 mm
- Find
 - 40% of 80 pigs
 - 30% of 70 glasses
 - 90% of 500 coins
 - 110% of \$60
 - 80% of 6 kg
 - 20% of 3.6 mm
 - 40% of 1.2 metres
 - 150% of \$4.
- Find 5% of
 - \$80
 - 60 horses
 - 120 speakers
 - 800 buttons
 - \$70
 - 62 kg
 - 61 kg
 - \$6.60
- Find 15% of
 - \$60
 - 80 erasers
 - 3000 mice
 - \$50
 - \$22
 - \$32
 - 110 metres
 - \$8.40
- Find 100% of
 - \$40
 - 48 roosters
 - 67 kangaroos
 - 34.7 km
- Find 110% of
 - \$40
 - 60 wallabies
 - 500 kookaburras
 - 7000 fish
- Find 90% of
 - \$20
 - 80 bats
 - 4500 eagles
 - \$56
- Find 120% of
 - \$50
 - 200 sharks
 - 50 000 magpies
 - \$70
- Find
 - 150% of 80 flies
 - 120% of 40 pens
 - 130% of 200 CDs
 - 250% of \$60

Mega-Challenge!

- A salesman earns $2\frac{1}{2}\%$ commission. He sells a car for \$30 000. What is his commission?
- I start with \$1000. It increases by 10%. The new amount increases by 10%. The new amount increases by 10%. How much do I have now?

Exercise 3: Mental Percents Based on 1%

Answers only are required. NO CALCULATOR!

To find 1% of a number:	Divide by 100 (move the decimal point two places to the left)
To find 2% of a number: and so on...	Divide by 100, then multiply by 2

- Find 1% of
 - \$2000
 - 500 lizards
 - 350 tonnes
 - 220 metres
 - \$4500
 - 14 000 ducks
 - 550 grams
 - \$1 million
- Find 2% of
 - \$5000
 - 1400 lions
 - 32 000 nuggets
 - \$50 000
 - \$32
 - \$71
 - 34 metres
 - 3.4 metres
- Find 1% of
 - \$15.60
 - 35 cm
 - 56 kg
 - \$134
- Find
 - 3% of 800 tiles
 - 4% of 700 glasses
 - 6% of 2000 buttons
 - 8% of \$6000
 - 2% of 400 razors
 - 9% of 30 km
 - 4% of \$5 million
 - 2% of \$65
- Find 101% of
 - \$80 000
 - 600 labels
 - 300 000 galahs
 - \$54
- Find 101% of
 - \$40
 - 60 wallabies
 - 500 kookaburras
 - 7000 fish
- Find 99% of
 - \$2000
 - 1800 shelves
 - 3500 pencils
 - \$46
- Find 103% of
 - \$50
 - 200 sharks
 - 50 000 magpies
 - \$70
- Find $\frac{1}{2}\%$ of
 - 600 cups
 - 40 000 dice
 - 3200 elephants
 - 440 kilograms
- Find
 - 104% of 600 eggs
 - 102% of \$650
 - 106% of 1000 pens
 - 109% of \$4000
- A used equipment salesman earns 3% commission. He sells a bulldozer for \$70 000. What is his commission?
- Find 17.3% of \$68.34 *without a calculator*, as follows:
Find 1% of \$68.34 by dividing 68.34 by 100,
Now multiply the answer by 17.3.

Mega-Challenge!

- A salesman earns $1\frac{1}{2}\%$ commission. He sells a car for \$40 000. What is his commission?
- The population of Slowville in 2003 was 65 206. In 2004 the population increased by 0.1%. What was the population at the end of 2004?

Exercise 4: Mental Percents Based on $33\frac{1}{3}\%$

Answers only are required. NO CALCULATORS!

To find $33\frac{1}{3}\%$ of a number:	Divide by 3
To find $66\frac{2}{3}\%$ of a number:	Divide by 3, then multiply by 2

- Find $33\frac{1}{3}\%$ of
 - \$3
 - 9 cats
 - 18 giraffes
 - 300 marbles
 - \$12 000
 - 24 DVDs
 - 33 skirts
 - 27 watches
- Find $66\frac{2}{3}\%$ of
 - \$3
 - 12 dogs
 - 21 pins
 - 30 bulbs
 - \$15 000
 - 60 000 hectares
 - 900 nuggets
 - \$300 000
- Find $33\frac{1}{3}\%$ of
 - \$4.50
 - 3.6 kg
 - \$12.30
 - 3.6 metres
- Find $66\frac{2}{3}\%$ of
 - \$4.50
 - 1.2 cm
 - 4.5 tonnes
 - 3.3 metres
- K-Mart is having a $33\frac{1}{3}\%$ off sale. How much will you *save* if you buy:
 - a pen that normally costs \$15?
 - a wallet that normally costs \$36?
- K-Mart is having a $33\frac{1}{3}\%$ off sale. How much will you *pay* if you buy:
 - a pen that normally costs \$15?
 - a wallet that normally costs \$36?
- K-Mart is having a $\frac{1}{3}$ off sale. How much will you *save* if you buy:
 - a skirt that normally costs \$54?
 - a bike that normally costs \$270?
- K-Mart is having a $\frac{1}{3}$ off sale. How much will you *pay* if you buy:
 - a skirt that normally costs \$54?
 - a bike that normally costs \$270?
- The population of Yeppoon has increased by $33\frac{1}{3}\%$ since 1999. The population in 1999 was 9000 people. What is the population now?
- The population of Dusty Creek has decreased by $33\frac{1}{3}\%$ since 1999. The population in 1999 was 39 people. What is the population now?

Mega Challenge!

- The population of Smithville was 1800 in 2000. In 2001 the population increased by $33\frac{1}{3}\%$. In 2002 the population decreased by $33\frac{1}{3}\%$. What was the population at the end of 2002?
- Find $66\frac{2}{3}\%$ of $66\frac{2}{3}\%$ of $66\frac{2}{3}\%$ of 27 people.

Exercise 5: Mental Percents – Mixed Questions

Answers only are required. NO CALCULATOR!

Set I

- Find 50% of
a. 30 b. 26 c. 5000 d. \$27 e. \$640 000 f. 0.06
- Find 25% of
a. 80 b. 200 c. 20 000 d. 28 e. 10 f. 17
- Find 10% of
a. 120 b. 45 c. 3700 d. 34.7 e. \$46.00 f. \$1320
- Find 20% of
a. 120 b. 7000 c. 820 d. 5 e. \$15 f. \$37
- Find 1% of
a. 300 b. 9000 c. \$1 240 000 d. \$45 e. \$7.50 f. 0.6
- Find 3% of
a. 300 b. 9000 c. \$600 d. \$1200 e. \$12.00 f. 180
- Find $66\frac{2}{3}\%$ of
a. 6 b. 90 c. 900 d. 18 e. 66 f. 0.12
- Find 100% of
a. 40 b. \$23.56 c. \$67.12 d. \$100 e. \$0.01 f. \$1 million
- Find 110% of
a. 40 b. \$120 c. 35 d. \$6 e. \$124 f. \$15

Set II

- Find 25% of
a. 12 b. 52 c. 5000 d. \$27 e. \$42 000 f. 0.06
- Find $12\frac{1}{2}\%$ of
a. 80 b. 240 c. \$10 000 d. 20 e. 30 f. \$50 000
- Find 5% of
a. 120 b. 20 c. \$9000 d. \$22 e. \$32.00 f. \$48.60
- Find 15% of
a. 30 b. 8000 c. 120 d. 6 e. \$1 f. \$32
- Find 4% of
a. 200 b. 6000 c. \$2 000 000 d. \$1000 e. \$3.20 f. \$8.00
- Find $\frac{1}{2}\%$ of
a. 500 b. 12000 c. \$800 d. \$60 000 e. \$126 f. \$336
- Find $133\frac{1}{3}\%$ of
a. 9 b. 90 c. 1200 d. 33 e. 48 f. 0.09
- Find $166\frac{2}{3}\%$ of
a. 9 b. 90 c. 1500 d. 24 e. 39 f. 0.12
- Find 600% of
a. 40 b. \$9 c. \$1.20 d. \$60 000 e. \$1200 f. \$99
- Find 350% of
a. 20 b. \$50 c. 8 d. \$9 e. \$15 f. \$220

Exercise 6: Fractions, Decimals and Percents Review

Benchmark Fractions, Decimals and Percents							
Fraction	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{8}$	$\frac{1}{10}$	$\frac{1}{100}$
Decimal							
Percent							

Complete the table

	Fraction	Decimal	Percent		Fraction	Decimal	Percent
1.	$\frac{1}{100}$			2.			30%
3.			60%	4.		0.07	
5.		0.25		6.	$\frac{5}{8}$		
7.	$\frac{1}{5}$			8.			90%
9.			12½%	10.	$\frac{1}{2}$		
11.		0.1		12.		0.53	
13.	$\frac{3}{8}$			14.			80%
15.			66⅔%	16.	$\frac{1}{3}$		
17.		0.75		18.		0.7	
19.		0.4		20.	$\frac{7}{8}$		

Percent to Decimal

1. 15% = _____ 2. 85% = _____ 3. 20% = _____ 4. 80% = _____
 5. 7% = _____ 6. 3% = _____ 7. 7.5% = _____ 8. 8.25% = _____

Decimal to Percent

1. 0.27 = _____ 2. 0.67 = _____ 3. 0.03 = _____ 4. 0.09 = _____
 5. 1.34 = _____ 6. 1.06 = _____ 7. 0.005 = _____ 8. 0.012 = _____

Fraction to Percent

1. $\frac{3}{5} = \frac{\quad}{10} = 0.\underline{\quad} = \underline{\quad}\%$ 2. $\frac{1}{2} = \frac{\quad}{10} = 0.\underline{\quad} = \underline{\quad}\%$ 3. $\frac{2}{5} = \frac{\quad}{10} = 0.\underline{\quad} = \underline{\quad}\%$
 4. $\frac{3}{20} = \frac{\quad}{10} = 0.\underline{\quad} = \underline{\quad}\%$ 5. $\frac{2}{25} = \frac{\quad}{10} = 0.\underline{\quad} = \underline{\quad}\%$ 6. $\frac{14}{50} = \frac{\quad}{10} = 0.\underline{\quad} = \underline{\quad}\%$

Percent to Fraction

1. 3% = _____ 2. 9% = _____ 3. 12% = _____ 4. 50% = _____
 5. 75% = _____ 6. 16% = _____ 7. 90% = _____ 8. 38% = _____

Exercise 7: Fractions, Decimals and Percents Review

Benchmark Fractions, Decimals and Percents							
Fraction	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{8}$	$\frac{1}{10}$	$\frac{1}{100}$
Decimal							
Percent							

Complete the table

	Fraction	Decimal	Percent		Fraction	Decimal	Percent
1.	$\frac{1}{3}$			2.		0.01	
3.	$\frac{9}{10}$			4.			7%
5.		0.75		6.	$\frac{5}{8}$		
7.	$\frac{1}{5}$			8.			90%
9.	$\frac{7}{8}$			10.			50%
11.			10%	12.		0.53	
13.		0.125		14.		0.8	
15.	$\frac{2}{3}$			16.			5%
17.			25%	18.		0.7	
19.	$\frac{3}{8}$			20.			35%

Percent to Decimal

1. 12% = _____ 2. 45% = _____ 3. 70% = _____ 4. 30% = _____
 5. 9% = _____ 6. 4% = _____ 7. 1.35% = _____ 8. 6.2% = _____

Decimal to Percent

1. 0.17 = _____ 2. 0.63 = _____ 3. 0.05 = _____ 4. 0.08 = _____
 5. 1.15 = _____ 6. 1.4 = _____ 7. 0.003 = _____ 8. 0.042 = _____

Fraction to Percent

1. $\frac{1}{5} = \underline{20}\%$ so $\frac{4}{5} = \underline{\quad}\%$ 2. $\frac{1}{10} = \underline{\quad}\%$ so $\frac{7}{10} = \underline{\quad}\%$ 3. $\frac{1}{8} = \underline{\quad}\%$ so $\frac{3}{8} = \underline{\quad}\%$
 4. $\frac{1}{20} = \underline{\quad}\%$ so $\frac{9}{20} = \underline{\quad}\%$ 5. $\frac{1}{25} = \underline{\quad}\%$ so $\frac{7}{25} = \underline{\quad}\%$ 6. $\frac{1}{50} = \underline{\quad}\%$ so $\frac{11}{50} = \underline{\quad}\%$

Percent to Fraction (simplify if possible)

1. 7% = _____ 2. 15% = _____ 3. 16% = _____
 4. 11% = _____ 5. 30% = _____ 6. 42% = _____