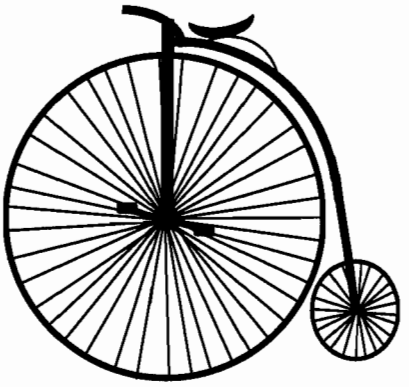
Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

T1

The circumference of a circle, $C = \pi d$, where d is the diameter



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It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

the big wheel could have a 52 inch diameter and the small wheel could have an 18 inch diameter.

1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.28 inches

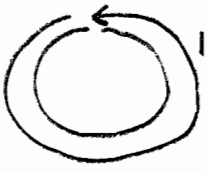
$C = \pi d$

$C = \pi (52)$

$C = 163.28$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 feet 7 inches



$$12 \overline{)163.28} \quad 13.606$$

$$163.28 - 156 = 7.28$$

T1

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

391.1 turns

$3\overline{)13.606}$ 4.535 about 5 yards

$4.535\overline{)1760}$

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1,121 turns

$C = \pi d$

$C = \pi(18)$

$12\overline{)56.52}$ in 4.78 ft.

$3\overline{)4.21}$ 1.57 yds

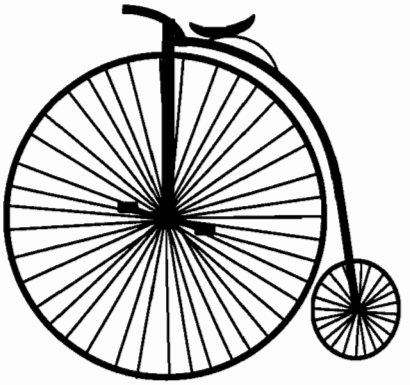
$1.57\overline{)1760}$ $1,121.01$ turns

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

T2

The circumference of a circle, $C = \pi d$, where d is the diameter



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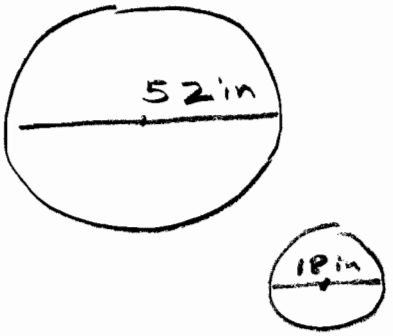
   Show how you figured it out.

   $C = 163.28$ inches



$\pi \cdot 52 = 163.28$

$\pi \cdot 18 = 56.52$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 feet 6 inches

$12 \overline{)163.28}$

T2

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

32 times

$C = 163.28$

$5,280 \div 163.28 = 32.33$

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

93 times

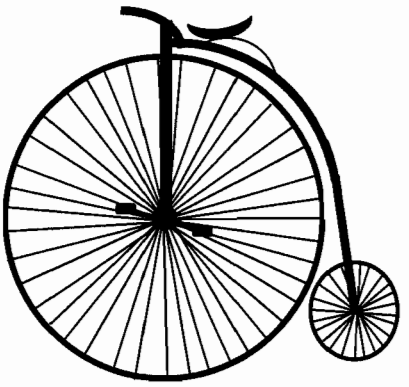
$C = 5,280 \div 56.52 = 93.412$

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

T3

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

163.36 inches

$C = \pi d \quad d = 52$

$C = \pi \cdot 52$

$C = 163.362818$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13 feet 6 inches

C

163.362818 ÷ 12

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

388 turns

$5280 \div 13.6$

inches and feet

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1123

$\pi \cdot 18 = C$

$C = 56.548667776$

$[56.55] \div 12$

$=$

4.71238898

4 Feet 7 inches

$5280 \div 4.7$

$=$

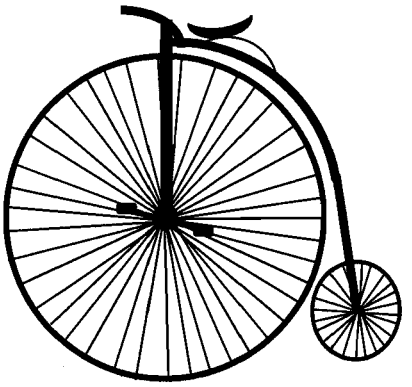
1123.404255

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

T4

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

   81 inches

   26 x TT

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   6 feet 7 inches

   81 ÷ 12 = 6.75

T4

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

788 turns

1760x3= 5280ft

5280/6.7

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

2295 turns

9xπ

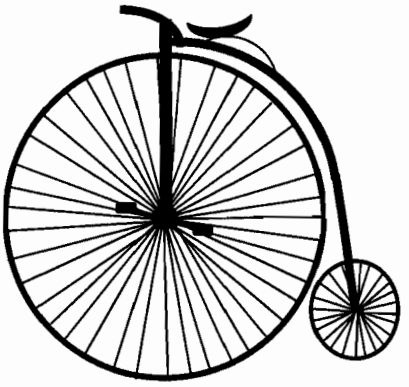
1turn = 2.3

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

T5

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.36 inches

I used the equation at the top $C = \pi d$ and entered 52 inch the diameter into the enter

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 feet 7 inches

I divided 163 by 12 which got me how many feet and the remainer got me the inches.

$$12\overline{)163}$$
$$-12$$
$$\overline{43}$$
$$-36$$
$$\overline{7}$$

T5

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

400 turns

multiplied 1760 by 3 then divided by 13 because that's how far the big wheel turns once

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1,120 turns

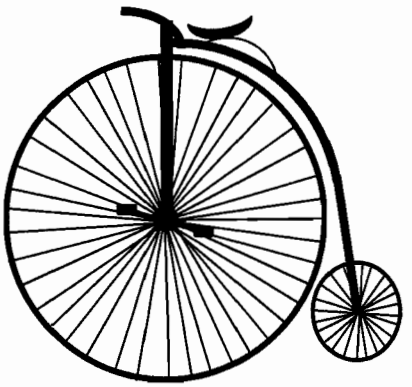
Multiplied 1760 by 3 then divided it by 4.7 because thats how far the little wheel turns once

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S1

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

163.28 inches

$C = \pi 52 = 163.28$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13 feet 7.28 inches

163.28
12
13ft 7in

S1

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

5280

≈ 388 times

= 390 times

13ft 7.28in

5280 ÷ 13.61

=

387.95

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

$C = \pi 18$

4.71

5280 ~~÷ 56.52~~

≈ 1120 times

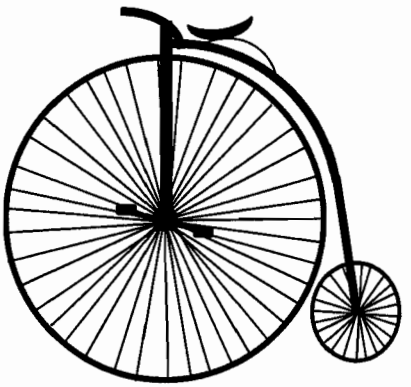
1121.019

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S2

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.4 inches

$C = \pi(52)$

$C = 163.4$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 feet 6 inches

$$\frac{163.4}{12} = 13.6$$

S2

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

410 turns.

$\frac{13}{3} = 4\frac{1}{3}$

$\frac{1760}{4\frac{1}{3}} = 406.15$

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

2640 turns.

$C = \pi(18)$

$= \frac{56.5}{12}$ in

$= \frac{4 \text{ ft } 7 \text{ in.}}{3}$

$= 1.5$ yds

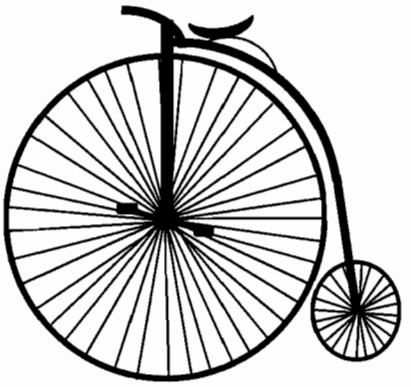
$1760 \times 1.5 = 2640$

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S3

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

   On the calculator, $52\pi = 163.36$

   163.36 inches

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   $12 \times 13 = 156$, 7 left over > 163 → 13'7"

   13 feet 7 inches

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

388.8 turns

7÷12=.58 One mile = 5280 ft

5280÷13.58= 388.8

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1133 turns

18π = 56.54

12×4=48
8 leftover

4'8" = 4.66

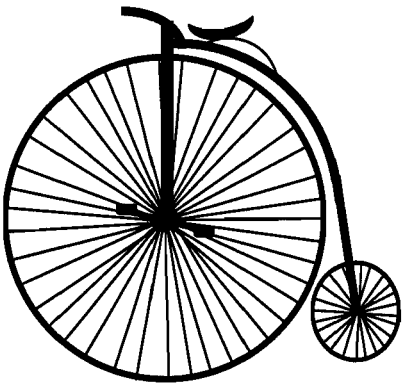
5280÷4.66=1133

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S4

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.28 inches

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 feet 7 inches

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

391.1

176
10|1760
-10
76
-70
60

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

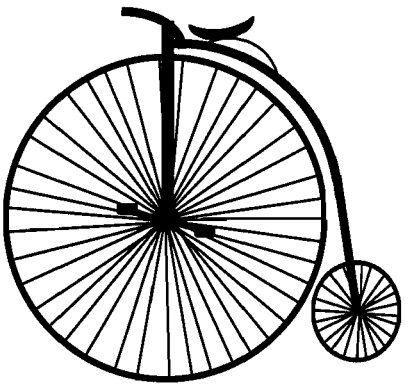
1,121

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S5

The circumference of a circle, $C = \pi d$, where d is the diameter



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Pie = 3.14 52 18

1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.28 inches

3.14
× 52
163.28

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 feet 6 inches

12 inch = 1 foot

$12\overline{)163.28}$ → $13.6\overline{0667}$

S5

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

32 times

5,280 in = 1 mile

5,280 ÷ 163.28 = 32.33

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

93 times

Small = 56,52

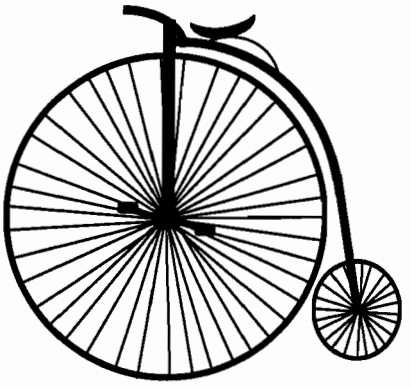
5,280 ÷ 56.52 = 93.41

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S6

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

163.28 inches

$C = 3.14 \cdot 52''$

$C = \pi(d)$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13 feet 7 inches

$C = 163.28''$

$\frac{163.28}{12} = 13'.6$

S6

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

633.60

634 turns

700.68

3 feet = 1 yard

1760

63360 = inches

3 feet = 1 yard
1 Mile = 1760 yards

634
× 2
1268

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

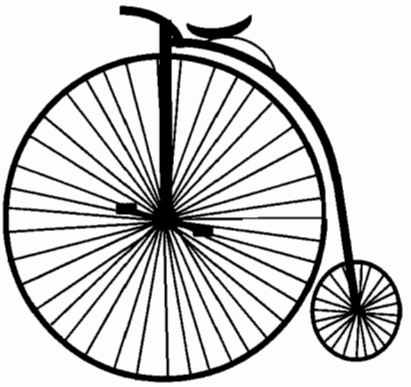
1268

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S7

The circumference of a circle, $C = \pi d$, where d is the diameter



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the big wheel could have a 52 inch diameter and the small wheel could have an 18 inch diameter.

1. What is the circumference of the big wheel?
   Show how you figured it out.

163.362818 inches

$C = \pi d$

$\_\_ = \pi \cdot 52$ $\pi 52 = 163.362818$

$C = 163.362818$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13 feet 7.362 inches

156 ÷ 12 = 13 ft.

+ 7.362 in.

163.362

S7

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

390

$\frac{7}{12} = .583 = 7in$

$1760 \cdot 3 = 5280$

$\frac{5280}{13.583}$ = Roughly 390 turns

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1130

$C = \pi d$

$56.548 = \pi 18$

$\frac{48}{12} = 5$

$48 + 8 = 56$

8in

~~1 turn~~

$56.548'' = 1$ turn

big wheel d.

$\frac{52}{18} = 2.888888889$

small wheel d.

390 = Amount of turns in 1m for big wheel

$390 \cdot 2.888888889 = 1126.666$

Round Up

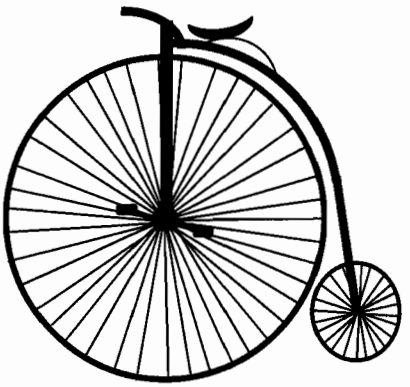
1130 turns

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S8

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

163.363 inches

I multiplied pi by 52 which is the diameter.

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13 feet 7 inches

I divided 163 by 12 and got 13.58

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

390 turns

I multiplied 1760 by 3 and got 5280 feet.
Then divided 5280 by 13.58 and got 388.809.

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1240 turns

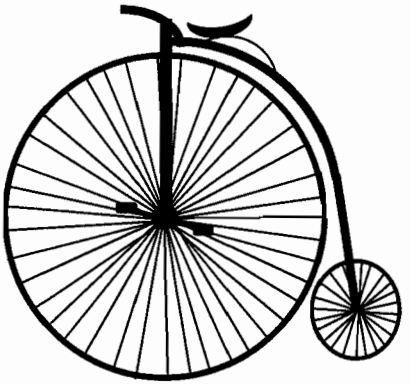
I figured out the circumfrence. Got the feet and inches then did the same thing I did for # 3.

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S9

The circumference of a circle, $C = \pi d$, where d is the diameter



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1. What is the circumference of the big wheel?
   Show how you figured it out.

163.28 inches

$\pi(52)$
$3.14(52)$
163.28

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13.6066 feet 163.28 inches

$12\overline{)163.28} = 13.6066$

$1\overline{)163.28}$

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.)
Give your answer to the nearest 10 turns.
Show how you figured it out.

410.

1 turn = 13 ft. $3\overline{)13}$ = 4.3

1 turn = 4.3 yds. $4.3\overline{)1760}$ = 409.30

turns: 409.30

nearest 10 turns 410

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1170

$\pi(18)$

$3.14(18) = 56.52$

$12\overline{)56.52}$ = 4.6

$3\overline{)14.6}$ = 1.5

1 turn = 4.6 ft

1 turn = 1.5 yds. $1.5\overline{)1760}$ = 1173.33

turns: 1173.33

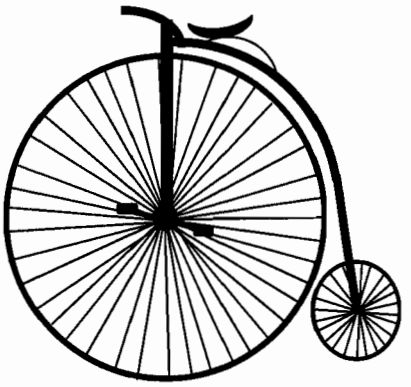
nearest 10 turns: 1170

Historic Bicycle

This problem gives you the chance to:
- work with the circumference of a circle

S10

The circumference of a circle, $C = \pi d$, where d is the diameter



Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

the big wheel could have a 52 inch diameter and the small wheel could have an 18 inch diameter.

1. What is the circumference of the big wheel?
   Show how you figured it out.

163.4 inches

$\pi \times 52 = C$ for the big wheel, $C = 163.4$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

13 feet 6.2 inches

163.4/12

3. How many times must the cyclist turn the big wheel to travel 1 mile?
(A mile is 1760 yards.) → 5280 ft → 63360 in
Give your answer to the nearest 10 turns.
Show how you figured it out. (4)

390 turns

Turned 1760 yards to feet, then inches, then divided 63360 in by 163.4 in.

4. How many times does the small wheel turn when the cycle travels 1 mile?
Give your answer to the nearest 10 turns.
Show how you figured it out.

1120 turns

56.5 63360 / 56.5 = (circumference)